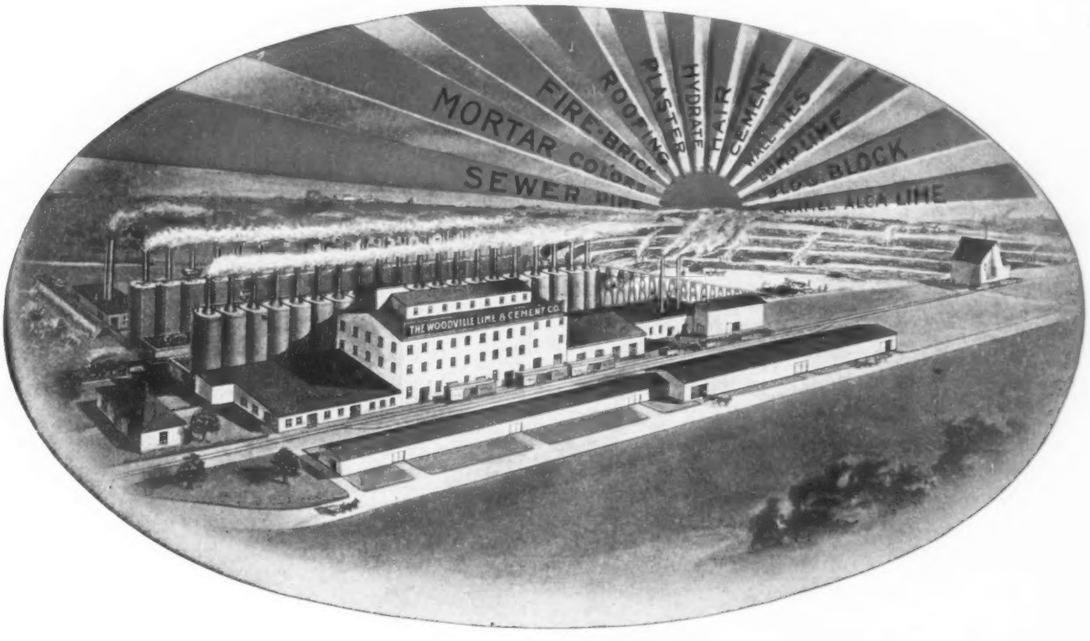
INDEX TO ADVERTISEMENTS PAGE 37


# Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVI | CHICAGO, ILL., MAY 7, 1915. | Number 1.






## "THE BEST UNDER THE SUN"

MANUFACTURERS OF

White Enamel Finish Hydrated Lime
White Lily Finish Hydrated Lime
Polar Bear "Alca" Stucco
Enamel "Alca" Plaster
Lump Lime

WHOLESALERS OF

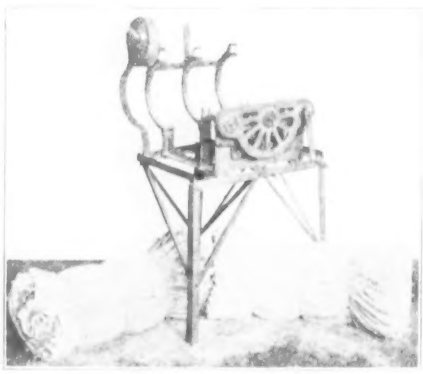
Hard Wall Plaster
Keene's Cement
Mortar Colors
Sewer Pipe
Roofings

**The Woodville Lime & Cement Company**

**1341-50 Nicholas Bldg., Toledo, Ohio**

TN950
.A3



## Bag Bundler

IT COUNTS 'EM AND BUNDLES 'EM

Saves Time
Eliminates Errors

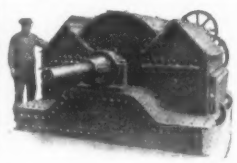
A few of our many customers say:

"It does the work of three men."
"Will shortly order three more."
"Would not take three times what we paid for it."
"It is a wonderful money saver."

Write for prices

**The Faeberhill Manufacturing Co.**
1392 East 40th St., CLEVELAND, O.

*Agents wanted in every city. A side line for machinery and builders supply salesman.*



## "PENNSYLVANIA"

**Hammer Crushers** For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc.

Main Frame of Steel, "Ball and Socket" Self aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running.
No other hammer Crusher has such a big Safety Factor

**Pennsylvania Crusher Co.**
New York PHILADELPHIA Pittsburgh

**Write us for prices on "BEAR CREEK" brand White Lime and "WHITE BEAR" Hydrated Lime. Prompt Shipment.**

**HANNIBAL LIME CO.** HANNIBAL MO.

Daily Capacity 7000 Barrels

The Quality Cement of the Middle West

***MORE THAN FIFTEEN YEARS OF SATISFACTION***

THREE PLANTS: ALPENA — DETROIT — WYANDOTTE

## HURON AND WYANDOTTE

**Water and Rail Facilities Best Serve the Entire Middle West**

EVERY BARREL TESTED AND GUARANTEED. SOLD BY THE BEST DEALERS EVERYWHERE

**Main Office: 1525 Ford Bldg., Detroit, Michigan**

Daily Capacity 3000 Barrels

The Leading Concrete Cement

## Beautiful Houses from Illinois to Massachusetts are Roofed with Reynolds Flexible Asphalt Shingles

A multitude of pretentious residences in a score of states are giving ample proof of the long-lasting surface of Reynolds Flexible Asphalt Shingles.

Every type of modern home can be protected and beautified, at lower cost, with these time-tried, weather-tested shingles. They withstand the ravages of driving rain, pelting hail, hottest sun and heaviest snow without warping, cracking, splitting, curling or blowing off. Sparks cannot set them of fire. Long Exposure cannot dull their rich color. Adaptable to every style of pitched roof, and make possible unusual architectural effects, such as roll edges, thatch effects and rounded corners.

## Reynolds Asphalt Shingles

**Guaranteed for 10 years—will wear many years longer—Write for liberal agency proposition.**

Rough-surfaced weather defiers made of crushed slate or granite securely embedded in pure Asphalt. Natural colors of garnet, red or gray-green which *never fade and never need painting.* We are the original makers of flexible asphalt slate shingles and tested them for ten years before putting them on the market. They are uniform in size—8 ins. by 12½ ins.—and are laid 4 ins. to the weather. Easily and quickly laid.

Let us send you a booklet showing photographs of modern houses roofed with Reynolds Asphalt Shingles. Write for a copy TODAY.

**H. M. REYNOLDS ASPHALT SHINGLE CO.**
Original Manufacturer Grand Rapids, Mich.
Established 1868 Members of National Builders' Supply Association

## Wheeling Wall Plaster Co.

**WHEELING, W. VA.**

WHEELING WALL PLASTER UNIFORMLY GOOD

The Building Material Supply House of the Ohio Valley

CAR LOADS AND LOCAL SHIPMENTS AT WHOLESALE PRICES

***Try Our Service***

United States Custom House and Postoffice, Omaha, Neb
KALLOLITE PLASTER USED

# Kallolite
# Cement Plaster

Was used on the Omaha Post Office, as well as many other

**Government and Public Buildings.**

Kallolite Cement Plaster is manufactured from the Purest Gypsum Rock found in the United States as shown by last Government Report.

## CARDIFF GYPSUM PLASTER CO.

☛ **Write for literature.** **FT. DODGE, IOWA**

## About Bakup and Partition Tile—

You ought to handle our 4x5x12 and 5x8x12 BAKUP TILE made from high-grade "Ohio" fire clay. We have a nice stock from which to make prompt shipments.

You can also get PARTITION TILE from us in sizes 3x12x12 up to 12x12x12.

One shipment from us will easily convince you that our material is what you ought to handle.

Write us for prices, etc.

**THE METROPOLITAN PAVING BRICK COMPANY**
**Canton, Ohio**

PETER MARTIN Prest. & Gen. Mgr. JULIUS M. MARTIN, Asst. Gen. Mgr

**Capital $1,500,000**

# THE OHIO AND WESTERN LIME CO.

Manufacturers and Wholesale Dealers in

**Ground Lime, Lump Lime, Fertilizer, Rock Wall Finish, Hydrated Lime, Cement, Plaster, Hair, Etc.**

**CAPACITY 8000 BARRELS PER DAY**

We have large stone crushers at various places. We make a Magnesia and high Carbonate of Lime. All of these limes are the very best on the market.

**THE LARGEST IN THE WORLD**

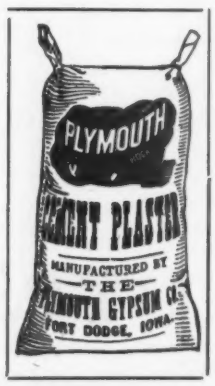
**WORKS AT** Huntington, Ind.; Fostoria, O.; Gibsonburg, O.; Sugar Ridge, O.; Tiffin, O.; Genoa, O.; Limestone, O.; Lime City, O.; Portage, O.; Marion, O; Bedford, Ind.

**OFFICES AT**

**Huntington, Ind. - - - - Marion, Ohio.**

## PLYMOUTH CLAY PRODUCTS CO.

**FORT DODGE, IOWA**




## PLASTER

**WOOD FIBER PLASTER**

**Fireproof Partition Blocks**
**Sackett Plaster Board**
**Steel Studding**

Known as Brands of Quality

WRITE US

**PLYMOUTH GYPSUM CO.**
FORT DODGE, IOWA

## NORTH-WESTERN PORTLAND CEMENT

NORTHWESTERN STATES PORTLAND CEMENT CO. — PORTLAND — NORTH-WESTERN — CEMENT — MASON CITY, IA.

The Reliable Portland Cement

A Portland Cement for the NORTHWEST

**North-Western States Portland Cement Co.**
**MASON CITY, IOWA**

MONARCH HYDRATED LIME

**Dealers Everywhere—**

**YOU SHOULD HANDLE**

## Monarch Brand Hydrated Lime

Because it's the only perfect Hydrated Lime and you can get increased business by recommending it. It's uniform. It's fine. It won't "blister" or cause "chip cracks" and "crazing."

You get the benefits of Monarch advertising service. You get the business that others are getting now.

Don't neglect this chance to increase your lime sales.

Ask us how we can help you sell Monarch Hydrated Lime. Write us that you want to be a "Monarch" man.

**National Lime & Stone Co.**
**CAREY, OHIO**

## Best Bros. Keene's Cement

*The Plaster That Stands Hard Knocks*

The permanent plaster for interior walls.
May be retempered as often as necessary.
Makes a perfect bond on concrete, brick, tile or lath.

**The Best Bros. Keene's Cement Co.**
Established 1889
Dept. A, Medicine Lodge, Kansas
NEW YORK CHICAGO

It is a fact that the contractors who are using the most "CHICAGO AA" Portland Cement, are the ones who have been using "CHICAGO AA" longest.

Crane Company (Corwith Plant), Chicago

IMPORTANT building construction work, whether it is small or large, requires the use of good cement.

That is why Marquette Portland Cement is used in important construction work throughout the Middle West. Every dealer in cement should know more about it; and the service offered when it is handled.

**Marquette Cement Mfg. Co.**
**1335 Marquette Bldg. Chicago**

More than 100 Stucco Houses were erected in Akron, Ohio—Willis & Carley Co., Contractors.
Sykes' Expanded Cup Self-Furring Metal Lath was used. Photo shows a few of these 100 houses.

Metal Lath is the logical economic material. It saves ***space, labor, money.*** Self-Furring Metal Lath saves more money. Write for our Free Book about and our Free Sample of

# Sykes' Expanded Cup Metal Lath

***Self-Furring—Saves 3 to 5 Cents a Square Yard***

Heavier, Stronger and Better than others when cut from the same gauge metal because Sykes' Lath is cut from wider strand. In judging metal lath consider ***weight*** and ***gauge***—not Gauge alone. Sykes' Expanded Cup Lath becomes firmly imbedded in plaster or stucco—a true backbone of everlasting strength.

**Best for Plaster Work, Overcoating and Stucco Work.** **Can't Be Applied Wrong.**

Approved by Architects. Indorsed by U. S. Government for Post Office Work.
If you're interested in good building write to us.

**FREE**

We'll send you free sample of lath and a set of Complete Specifications for Stucco and Metal Lath. *Write for it and save money.*

**SYKES METAL LATH AND ROOFING CO.**
**508 RIVER ROAD WARREN, OHIO**

# THE K-B PULVERIZER

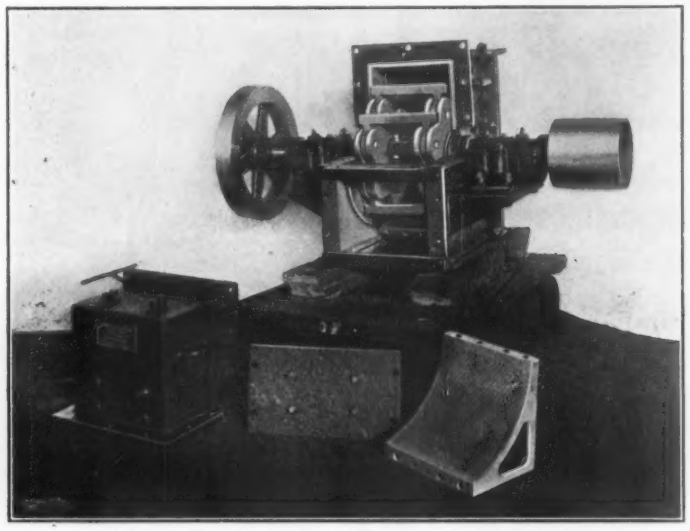
is the only machine combining these advantages:

Steel Frame

Alloy Steel Lining Plates

Adjustable Manganese Steel Hammers

Readily Removable Screens



Easily Accessible Parts

Gives Fine or Coarse Products

Simple Compact

Large Capacity

Low Power

**K-B Pulverizer Co., Inc.** MANUFACTURERS

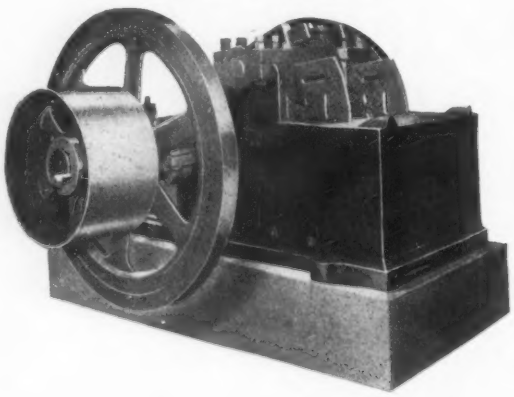
86 WORTH STREET
NEW YORK CITY

## One Advantage of the Blake Type Crusher

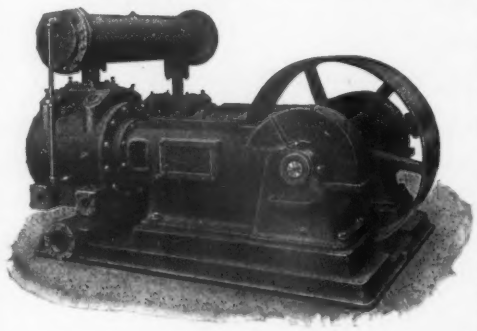
The bed, bumpers and all movable parts are cast with all holes cored, requiring no machine work whatever, which enables us to make the castings stronger to withstand the wear, and eliminates the possibility of mistakes in making repairs and lessens the cost of construction as well as the repairs to the consumer.

Write today for further information and one of our booklets.

**Webb City and Carterville Foundry & Machine Works**
Main Office, Webb City, Mo.



## This CLAYTON Air Compressor
### Has Protected Working Parts



The enclosed frame Clayton Air Compressor has a decided advantage under any conditions and is particularly desirable for service where moving parts must be protected from dirt and grit, such as in stone works and foundries.

The enclosed frame makes possible the "Splash Oiling" system of lubrication which requires no attention; the connecting rod dips into the reservoir in the base of the frame and its motion floods all running parts with oil.

The cover plate secures all of these advantages; at the same time, it can be readily removed, affording quick access to all bearings, crank pin, wrist pin and cross head guides.

*Bulletin C 206-58 describes this type in detail. Send for a copy.*

**International Steam Pump Co.**
Clayton Air Compressor Plant
Works: East Cambridge, Mass. New York Office: 115 Broadway

Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, El Paso, Houston, Kansas City, Los Angeles, Louisville, New Orleans, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle
Canadian Agents: Mussens, Ltd., Montreal.
C 174.2

# Large Crushing Tonnage

On All Kinds of Rock

Any or All the Time

High Efficiency

Correct Design

SIZES No. 1 to No. 10

CAPACITY 5 to 500 Tons P. Hr.

## Traylor Gyratory Crushers

are of the most modern and up-to-date type gyratory on the market and contain superior features such as:

SHAFTS—proven by severest operation to be correctly designed;
SUSPENSION—at point of least gyration;
ECCENTRIC BEARING—of extra large area;
ACCESSIBILITY—for dismantling;
POSITIVE LUBRICATION; and CAST STEEL GEARS.
Above features constitute a few of the many TRAYLOR FEATURES that reduce the cost of up-keep to a minimum.

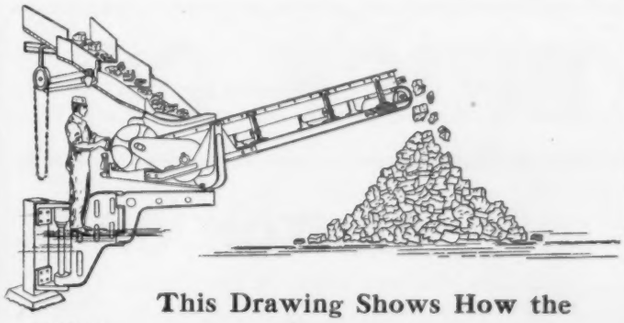
**Catalog "G-2" describes our Gyratories. Send for it.**

## Traylor Engineering & Mfg. Co.

**Main Office and Works: Allentown, Pa.**

**New York Office: 24 Church St. Western Office: Salt Lake City, Utah**





**This Drawing Shows How the**

## LONG REACH MANIERRE Loader

**Loads Lump Lime or Other Rock Products Without Breakage**

Picture this loader swung into a box car on its hinged arms and reaching far out into the end, tilted so as to be close to the floor. The hopper gate above opens, the operator starts the steel apron which carries the product swiftly but gently to the end of the car. As the pile grows, the spout is raised to its present position, or even higher. When one end is filled, the machine is easily and quickly turned so as to fill the other. Bulletin 415 tells more. Write for it.

*"Six firms use thirty-one Manierres"*

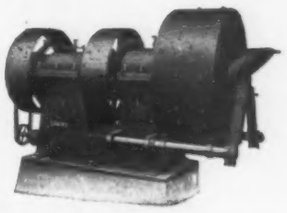
## Manierre Engineering & Machinery Company

**Milwaukee Wisconsin**



ALABAMA
ALASKA
ARIZONA
CALIFORNIA
COLORADO
CONN.
DELAWARE
GEORGIA
IDAHO
ILLINOIS
INDIANA
IOWA
KENTUCKY
MASS.
MICHIGAN
MINNESOTA
MISSOURI

MONTANA
NEW JERSEY
NEW MEXICO
NEW YORK
NO. DAKOTA
OHIO
OREGON
PENN.
TENNESSEE
TEXAS
UTAH
WASH.
WISCONSIN
CHILE
MEXICO
NORWAY
SPAIN



## *The* SYMONS Disc Crusher

conquers the high cost machines in its advance throughout the United States and foreign countries after being on the market only four years. They are operating in all the states and countries mentioned reducing

**Trap-Rock Granite**
**Limestone Boulders**
**Gravel Slag**
**Coke**

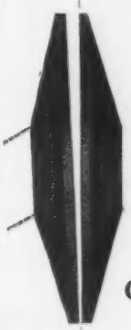
and on ore from

Copper, Lead, Zinc, Gold and Silver Mines at a cost of approximately 2/10ths of a cent per ton of ore crushed.

These operators have been our best advertisers as to the merits of these machines and we feel absolutely sure of our ground when we say to you

***Eventually Symons Discs***

Manufactured and sold only by

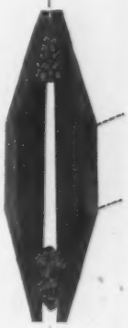


## CHALMERS & WILLIAMS

**1450 Arnold Street**

**CHICAGO HEIGHTS, ILL.**

**New York Office, Equitable Bldg.**



# BRICK ROADS

F. LAWSON MOORES, President — W. W. CONEY, Sec'y & Treas

## THE HARRIS BRICK COMPANY

Factory: ZANESVILLE, OHIO

Manufacturers of VITRIFIED SHALE BRICK, HARRIS PAVERS

Office: St. Paul Building CINCINNATI

## THE METROPOLITAN PAVING BRICK COMPANY

Manufacturers of "BEST PAVING BLOCK MADE"

CANTON - - - - - OHIO

## THE THORNTON FIRE BRICK CO.

Use "Grafton" Shale or Fire Clay Block for Permanent Pavements

CLARKSBURG, W. VA.

Robert W. Hunt — Jno. J. Cone — Jas. C. Hallsted — D. W. McNaugher

## Robert W. Hunt & Co., Engineers

Bureau Of

INSPECTION TESTS AND CONSULTATION

General Offices

TESTS OF PAVING BRICK — 2200 Insurance Exchange, Chicago — SEND FOR OUR BOOKLET "B"

# THE BELDEN BRICK CO.

Incorporated 1893

**Sales Offices:** CANTON, OHIO

## FIVE MODERN FACTORIES

producing practically every color and texture of Face Brick put us in position to take care of the dealer to the best possible advantage. It will pay you to have our samples and prices. Write now.

**FACTORIES:**

**Canton, O. Somerset, O. Port Washington, O. Uhrichsville, O. Tuscarawas, O.**

# BOSTWICK

**Sales Pointers No. 5**

Look at the Last Four Issues Rock Products For Nos. 1, 2, 3 and 4.

## YOU CAN SELL "Bostwick Truss-Loop" Metal Lath

**BECAUSE,** of the potency of human interest which impels every man to consider any proposition that makes for the safety, the convenience and the pleasure of his home and home people.

**BECAUSE,** Every man who thinks is alive to the necessity of conserving the National supply of lumber, is ready to build of fireproof material and to let the trees grow.

**The Bostwick Steel Lath Co. - - - Niles, Ohio**

## BRICK—The Old Way of Handling Them is a Nuisance

In tossing brick out of a car many are broken. A wheelbarrow doesn't carry enough bricks to warrant the time it takes to load, wheel it out and dump it.

### Use a CLEVELAND BRICK CLAMP

*It is the Newest and Quickest Way*

Furthermore, in unloading brick it actually saves ONE-THIRD of the time over the old methods. This clamp is adjustable and will carry from FOUR to TWELVE bricks. There's no fuss or bother. Simply place the clamp down on the bricks and lift the handle.

The price? It is so inexpensive ANYONE can afford it. Just send your name on a postal and we'll send a neat catalog and price list.

**THE P. D. CRANE COMPANY, 10201 Harvard Avenue, Cleveland, Ohio**

## GET STARTED RIGHT BUY EFFICIENCY

In Slack Cableway Machinery
The Negley Excavators Are Best

**For RESULTS AT MINIMUM COST**

All Operations with This Machine Because

**IT DISCHARGES** FAST OR SLOW at MAST OR ANCHOR

INDIANAPOLIS CABLE EXCAVATOR CO.

BEAUTY AVE. & NEW YORK ST., INDIANAPOLIS, INDIANA
LELAND EQUIPMENT CO., San Francisco, Cal.
CHAS. T. TOPPING MACHINERY CO., Pittsburgh, Pa.
LECKY & COLLIS, Ltd. Montreal Toronto Napanee
WESTERN SUPPLY & EQUIPMENT CO., Ltd.
Edmonton Calgary Lethbridge

## Dragline Cableway Excavators

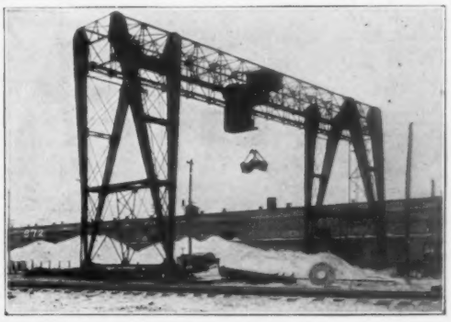
SHEARER & MAYER & SAUERMAN PATENTS

Dig convey, elevate and dump in one continuous operation, from wet or dry pit, to bins, screens, cars, or storage piles. Operated with a double drum friction hoist. Buckets are designed to dump at either end of track cable and are under positive control of one operator.

Write us your conditions and requirements and we will advise you if our equipment is adaptable.

**Sauerman Brothers, Engineers**

1140 Monadnock Block CHICAGO, ILLINOIS



Special Sand Handling Gantry Crane built for the Edward Ford Plate Glass Company, Toledo.

## SOLVING THE PROBLEM

of how to handle your raw materials in the quickest, cheapest and best manner is easily accomplished if you do it the

## "McMYLER INTERSTATE WAY"

Our engineers are ready to co-operate with you and show you how. It is a **real service** in which they take considerable pride, and it is yours for the asking.

**The McMyler Interstate Company** Dept. P-2 **Cleveland, Ohio**

Products—Locomotive Cranes—All type of Buckets for every purpose—Elevating and Conveying Machinery, etc. New York London Chicago

# Money in Lime

To make money from lime the dealer must get continuous sales and large volume.

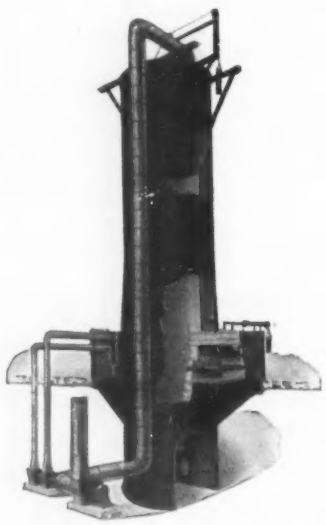
**TIGER BRAND**
**HYDRATED LIME**

has been continually advertised to architects, contractors and builders for a number of years.

These men know it and use it because it is the only lime that has been kept before them.

**The Kelley Island Lime & Transport Company**
Leader Building CLEVELAND, OHIO

## Doherty-Eldred Lime Kiln



# The Improved Equipment Co.

COMBUSTION ENGINEERS
60 Wall St., New York City

Complete Coal Gas Plants
Complete Lime Burning Plants
Gas Producers
Lime Kilns
Special Industrial Furnaces
Refractory Materials

# Five Points of Contact —Use Any One

The salesman we send to you is a man chosen because of his ability to help you in your problems. Call on him for any advice or assistance he can give.

The branch office in your territory is in direct 'phone communication with our mills. Word to it will start a car to you at once.

A letter to us either with an order or simply asking information will start an answer to you the day the letter arrives.

The telegraph is at your disposal if your case demands immediate attention.

For the most urgent matters a few minutes over the telephone will enable us immediately to take care of your wishes.

We have established every means in our power for you to reach us. It is our honest belief that it is to our mutual advantage to get together. What do you think?

**LEHIGH CEMENT**

**Lehigh Portland Cement Company**
ALLENTOWN CHICAGO SPOKANE

MAY 13 1915
©CLB333893

# Rock Products and BUILDING MATERIALS

## INCORPORATING DEALERS BUILDING MATERIAL RECORD

**Volume XVI.** **CHICAGO, MAY 7, 1915.** **Number 1.**

PUBLISHED SEMI-MONTHLY.
DEVOTED TO
Quarry Products, Cement, Lime, Plaster, Sand and Gravel, Clay Products and Building Specialties—Fireproof Building and Road Construction.

THE FRANCIS PUBLISHING COMPANY.
EDGAR H. DEFEBAUGH, Prest.

Seventh Floor, Ellsworth Bldg., 537 So. Dearborn St., Chicago, Ill., U. S. A.
Telephone: Harrison 8086, 8087 and 8088.

EDITORS:
EDGAR H. DEFEBAUGH. FRED K. IRVINE.

GEORGE A. OLSEN, Editor Retailers' Section. F. G. PULLEY, Associate Editor.
H. F. AKE, Secretary.
DRUSUS H. NICHOLS, Advertising Manager.

Communications on subjects of interest to any branch of the industry are solicited and will be paid for if available.
Every reader is invited to make the office of Rock Products and Building Materials his headquarters while in Chicago.
Editorial and advertising copy should reach this office at least five days preceding publication date.

TERMS OF ANNUAL SUBSCRIPTION.
In the United States and Possessions.....$1.00
In all other Countries in the Postal Union.....$1.50
Subscriptions are payable in advance, and in default of written orders to the contrary, are continued at our option.
Advertising rates furnished on application.

Published on the 7th and 22nd of each month.
Entered as second-class matter July 2nd, 1907, at the Postoffice at Chicago, Illinois, under act of March 3rd, 1879.
Copyright, 1915, by E. H. Defebaugh.

Some Western specialists have been working in the development of gypsum concrete and it is claimed that some very promising results have been obtained.

American business men are too busy in these days to think about anything except orders and the means for delivering the goods that represent the demands of their customers.

Reports from the cement mills indicate that practically all of them are blowing in the big kilns and starting operations at full tilt. Nineteen fifteen is to be a banner year by every present indication.

The value of fireproof construction by the use of concrete has probably not been developed over one per cent of the possibilities in that direction. This most valuable feature of cement to mankind remains still almost as a closed book.

The sand-lime brick manufacturers throughout this country and Canada have struck the stride of success with their excellent product through the route of the recommendation of the man who has had the experience of good results. Satisfied customers are a splendid asset.

The railroads have had all the best of it during the present administration and yet the only word they have learned how to use effectively is "more." Probably it is chronic and they will always be in the same condition until the identical remedy is applied to them that happened to the express companies by the route of the parcels post. It is worse than a joke the way they have handled their opportunities, their donations and their extremely liberal incomes. Palatial depots are not particularly useful and only emphasize the prodigality with which "come-easy money" can be spent by officials whose first duty it is to need "more."

Metal lath and corner beads have made good and become a standard line with the progressive dealers in builders' supplies. The concern that doesn't have these materials on hand at the present time is simply overlooking one of the staples that has been developed in recent years quite as indispensable and just as profitable as are the lines of cement, lime and plaster.

The biggest crops that were ever planted in America are now being put into the ground which, when taken with the exceptionally good prices for all of the staples, means a very large measure of prosperity along about harvest time. The gold and the credit will come pouring back to the initial producer long before he can take measures to distribute it to pay for his needs and desires.

Some people have a false impression that hydrated lime costs more than the raw-burned product. Really it is much cheaper because a greater percentage of it is developed in practice for actual use in the work. In fact, hydrate is 90 to 95 per cent efficient as compared with something like 20 per cent actual efficiency in raw-burned lime on any building job. This comparison works out in practice every time.

The annual recurrence of strikes in the building trade in the big cities of the United States are more expensive and demoralizing in many respects than the European war conditions. In fact, it is one type of war. It is without beginning or end. No cure is ever adopted. Every strike is terminated with a patch that works loose in a very short time because it partakes of the nature of a forced compromise. As the years go by we do not seem to make any progress in the solution of the problem—if there is any problem at the foundation of the contention. This is not an intelligent way to approach or to dispose of such a trade difficulty which is ruinous to the profits of many individuals and unsatisfactory to every one connected with the inconveniences engendered in the business world. There is no one who is in a position to state a definite reason or cause for any of the strikes that have come up in recent years, with the exception that one or another band or several bands of workmen, acting in conjunction upon some unknown advice, have concluded that they can extract higher wages from their employers by this insidious method. It is to be remarked that those workmen who receive extremely high pay, comparatively speaking, for very ordinary labor, requiring only a slight amount of skill, are those who are most ready to begin the trouble. It is to be remarked that the labor bill on big city structures make the total cost of such materials as cement, lime, plaster, bricks and other things shrink into insignificance by comparison. Would it not be a very good thing to investigate these matters in the building trade thoroughly so as to expose the real basic causes and show up the men who are responsible for making these angry disturbances and so get at the taproot of the problem. There is no use in making a patch for the plasters, another for the carpenters, the plumbers, the bricklayers and what-not. It is up to the man whose business is hurt by these things to get busy with his best brains to make a beginning, at least, so that some progress can be made in the application of a real cure of discord and that some semblance of harmony may be worked out in the future, no matter how distant that happy date may be.

# WITH YOU and ME

W. E. Minter, president of the West Virginia Lumber and Builders' Supply Dealers' Association, reports that as a result of the recent convention at Parkersburg, letters are being received at headquarters from all parts of the state, telling of the

W. E. MINTER.

intense interest dealers are taking in the association and offering congratulations and suggestions on the proposed program of the association for the next 12 months. Mr. Minter states that the officers and directors have undertaken to make the association an instrument of direct value to every dealer in the state. It has secured the services of the law firm of Marcum and Marcum of Huntington, who will give members and associate members free legal advice on matters pertaining to the building material business, as well as compile and report all legislative, judicial and commercial decisions of interest to this particular business. The association is also working along the lines of trying to define a dealer and to distinguish between dealers and manufacturers. Mr. Minter states that no stone will be left unturned in an effort to tighten up every screw in the business which will stop any leak and make more effective and profitable the money and energy invested in this business.

---

At a recent meeting of the board of directors of the Master Builders' Exchange, of Philadelphia, seven applicants were admitted to membership. They are the H. E. Grau Co., William Linker Co., Robert B. Lederle, Phoenix Iron Co., John Decker and Son, W. W. Anstine and Co., and the George Kessler Contracting Co. The board unanimously approved the selection of the lot at Twenty-fourth and Chestnut streets as the proposed site for the new Convention hall.

---

Members of the Atlantic (Ga.) Builders' Exchange are making final preparations for their annual meeting and election of officers, which will probably be held May 19. J. T. Rose is president.

Members of the Illinois legislature are considering the advisability of establishing a state building code and of passing a bill providing for the licensing of structural engineers.

---

Fritz Salmen, of Slidell, La., head of the Salmen Brick and Lumber Co., one of the largest companies in the South, was made president of the Louisiana State Sunday School Association, following the windup of its convention on April 15.

---

F. C. Bogk, of the Ricketson Mineral Paint Works, Milwaukee, Wis., writes from San Francisco that he has "strayed quite far away from home," but has found a "glorious climate." Referring to the "You can't fade 'em" colors, he says: "I'll bet our colors would not fade even in the hot sun of California."

---

Warren E. Emley, the lime specialist of the United Bureau of Standards, with headquarters at Pittsburgh, has been touring the territory of the Pacific Coast. He visited practically every commercial lime operation in the states of Washington, Oregon and California. Incidentally while in Frisco he visited the Panama-Pacific Exposition. He says the big show is bigger and grander than the St. Louis Exposition, and that the attendance seems to be fully up to expectations. He saw the largest completed section of the "Pacific Coast Highway," being 29 miles of concrete road in Southern Oregon. In the mixture of this road 15 per cent of hydrated lime was used to displace about half that percentage of cement so as to make a leaner mix and at the same time to secure a better "flow" of the plastic material, according to the explanation of the consulting engineers, Edwards & Lazelle, of Portland. This section was laid last year and very careful inspection is now being maintained in order to get reliable data for future specifications. To all appearances the section of road is in very perfect condition. The city engineer of San Francisco, is using 10 per cent of hydrate in all the concrete mixtures of important engineering work in that city. The same thing is true in practically all of the principal cities of the Pacific Coast. The general complaint in the far West is that the cities are overbuilt and general building operations for that reason are a little off.

## Scheduled Meetings

**May 10-13.—Association of American Portland Cement Manufacturers, Blackstone hotel, Chicago.**

**May 11.—Building Material Dealers' Association of Eastern Pennsylvania, special meeting, Philadelphia, Pa.**

**May 20.—Del-Mar-Col Building Material Dealers' Association, regular quarterly meeting, Wilmington, Del.**

**June 22-26.—American Society for Testing Materials, eighteenth annual convention, Traymore hotel, Atlantic City, N. J.**

**Aug. 31-Sept. 3.—Good Roads Congress to be held by Tri-State Good Roads' Association, San Francisco, Calif.**

**Sept. 20-25.—Pan American Road Congress to be held by American Road Builders' Association and American Highway Association, Oakland, Calif.**

The Pratt Building Material Co., of San Francisco, has bought the entire stock, consisting of over half a million brick, and leased the yards and wharfs of the Vallejo Brick & Tile Co., of the same city. C. F. Pratt is president of the company,

C. F. PRATT.

which has offices in the Hurst building, and which recently bought and disposed of the stock of the Golden Gate Brick Co.

---

Offices of the Vulcanite Portland Cement Co. have since May 1 been located at 8 West Fortieth street, New York City, opposite the public library building.

---

In the course of an address before the Western Retail Lumber Dealers' Club at Galesburg, Ill., G. E. Hotchkiss, secretary emeritus of the Illinois Lumber & Builders' Supply Dealers' Association, denied the charge of investigators of the Federal Bureau of Corporations that there is a nation-wide combination of lumber dealers which fixes prices and stifles competition. Mr. Hotchkiss also severely criticised newspapers for printing such charges without investigation.

---

The eighteenth annual meeting of the American Society for Testing Materials has been announced to be held at Atlantic City, N. J., June 22-26, 1915, with headquarters at the Hotel Traymore. Professor Edgar Marburg, of Pennsylvania University, the very able secretary-treasurer of the society, has mailed to the entire membership a provisional program covering five days of continuous work for the meeting. This society, recognized to be the most reliable and important technical organization dealing with the materials of construction, while conservative has always a cordial welcome for all parties interested in the improvement and classification of structural materials of all kinds. The standards already adopted by the society constitute the rule and guide for the manufacture of all universally accepted building materials.

### HIGHWAY LECTURERS APPOINTED.

Columbia university has appointed the following non-resident lecturers for the 1915-1916 session of the graduate course in highway engineering: Charles J. Bennett, state highway commissioner of Connecticut; John A. Bensel, consulting engineer; Will P. Blair, secretary, National Paving Brick Manufacturers' Association; Sumner R. Church, manager, Research Department, Barrett Manufacturing Co.; Frederick A. Cleveland, director, Bureau of Municipal Research, New York; William H. Connell, chief, Bureau of Highways and Street Cleaning, Philadelphia; Morris Llewellyn Cooke, director, Department of Public Works, Philadelphia; W. W. Crosby, chief engineer, Maryland Geological and Economic Survey, and consulting engineer; Charles Henry Davis, president, National Highways Association; A. W. Dow, chemical and consulting paving engineer; Edwin Duffey, commissioner of highways, New York state; Lewis R. Ferguson, assistant secretary, Association of American Portland Cement Manufacturers; C. N. Forrest, chief chemist, The Barber Asphalt Paving Co.; Wilson P. Foss, Sr., president, The New York Trap Rock Co.; Walter H. Fulweiler, chief chemist, The United Gas Improvement Co.; E. P. Goodrich, consulting engineer; D. L. Hough, president, The Cuban Engineering & Contracting Co.; William A. Howell, engineer of streets and highways, Newark; Nelson P. Lewis, chief engineer, Board of Estimate and Apportionment, New York; Walter R. Marden, vice president and chief engineer, The United Construction Co.; H. B. Pullar, general manager, The Pioneer Asphalt Co.; Philip P. Sharples, manager, general Tarvia department, Barrett Manufacturing Co.; Francis P. Smith, chemical and consulting paving engineer; Albert Sommer, consulting chemical engineer; George W. Tillson, consulting engineer to the president of the borough of Brooklyn, New York; John Cassan Wait, attorney at law; George C. Warren, president, Warren Brothers Co.

### THE LEGAL STANDARD BARREL.

Legislation regulating the size of standard barrels has been enacted by congress by the passage in the senate on the last day of the session by the adoption of House Bill 4899. This makes the standard barrel for all dry commodities to have the following dimensions: Length of staves, 28½ inches; diameter of heads, 17⅛ inches; distance between heads, 26 inches; circumference at bilge, 64 inches, outside measurement. Thickness of staves not greater than four-tenths of an inch. It is further provided that any barrel of different form having a capacity of 7,056 cubic inches shall be a standard barrel.

This establishes the size of the standard American barrel upon the basis of volume measurement, and the weights of all dry commodities with reference to the volume adopted must be adjusted when sales are made by the barrel unit.

Cement, lime, plaster, the three great staples of the building trades, will be governed accordingly.

### NEW KIND OF BRICK.

A new building material has lately been discovered, according to recent news reports, in the dust known as "tailings," which pile almost mountain-high around the entrance of every coal mine.

A. Malivozky, a Polish ceramic chemist, who recently visited this country, discovered that this coal refuse could be turned into brick and a large corporation, capitalized at $2,000,000, has been organized to enter upon the manufacture of this new product.

The bricks are a deep cream shade, closely flecked with irregular red blotches due to the percentage of iron contained in the coal. This gives a most artistic color to the brick. It has also the advantage of being very hard and close grained, so that it will take a high polish, resembling granite in texture.

Another advantage of this new building material, which it is believed will soon be in great popular favor, is that it can be made in any desired size and shape. While bricks in standard sizes will be staple, the material can be formed into pillars, ornamental columns, steps and other forms.

Henry S. Gray, secretary and treasurer of J. B. Speed & Co., is taking a leading part in work for the establishment of a permanent exposition of Louisville products. He is one of a committee of five manufacturers who have been handling the project and who have leased on behalf of the Louisville Commercial Club the Arcadia building at Fourth and Broadway, where the products of the numerous local factories will be displayed. Mr. Gray is one of the big figures in Louisville commercial life, and recently declined nomination for the presidency of the Commercial Club. He is running for a directorship, the annual meeting to be held May 11.

### HEAR LIEN LAW EXPLAINED.

Representative dealers in building materials heard two lucid talks by experts in Ft. Worth, Texas, a few days ago, on the benefits of the mechanics' and material men's lien law enacted by the recent legislature. The speakers were T. E. Jackson and M. E. Spafford, of Dallas. Mr. Spafford, who drafted the law, went into detail, explaining the workings of the new law and its benefits. Mr. Jackson spoke briefly. He said building activities would be increased. Harry Hurt presided at the banquet, given in the Metropolitan hotel. About 30 material dealers were present.

# The BUILDERS' POET

## Buck Up!

I

It looks to me as though the smoke from Europe's bloody skies
Had drifted over here to us and clouded up our eyes,
For everybody's gloomy and the business of the day
Consists in counting losses in the European fray;
We know the war debt interest of every fighting power
We've figured out the net amount it costs them every hour.

II

If causes psychological control our daily acts,
If we are more affected by our fancies than by facts,
It isn't difficult to see why business men repine
And fret because their business seems to waver and decline;
For thinking of the troubles that some other fellow's got
Will magnify our own, until ours seem an awful lot.

III

We really ought to take a brace, forget the war a while,
Iron out the wrinkles on our face and learn again to smile,
Develop concentration just in minding our affairs
And give our undivided time to peddling our wares.
Doggone it, man, get on the van, read up on how to grin,
You don't half know the value of the world you're living in.

—Frank Adams Mitchell.

## The Merry Month.

May is the month men most admire; 'tis then the poets swat the lyre, and painters seek the rural dell, to make a daub they'll never sell. May is the month when all the earth is glowing in a grand new birth; green things are growing from the ground, the air is full of joyous sound, with carolings of happy birds, which give us songs without the words. Then every man who isn't dead forgets the past and looks ahead.

Oh, May dispels the winter's gloom; 'tis then the housewife takes her broom, and mop and other weapons strange, and tidies up her Moated Grange. She cleans the house, on every floor, and then she cleans it up some more, and makes the place so blooming fine that every doorknob seems to shine. The wife who doesn't do a thing at cleaning house in days of spring, who doesn't banish dirt and dust, is looked upon with deep disgust. The neighbors at their purple teas, or culture clubs, or quilting bees, discuss her course in frigid tones, and call her Old Dame Lazybones.

And so the business man, in May, should shoo his winter grouch away, should then with sorrow cease to sup, and do some mental cleaning up. The cobwebs of the wintertime, the junk, the lumber and the grime, will all be banished from the brain of every man who's safe and sane.

Instead of grumbling o'er the grief for which the springtime brings relief, he'll sing as gayly as the birds, and to his tune he'll fit some words: "The world's a bully place in May, and everything will come my way! Trade is improving on the jump, and there's a prize for him who'll hump; our exports grow to beat the band, the mills are busy through the land, the farmers never saw, they say, a better spring for corn and hay, and everything gives promise that we'll all be prosperous and fat!"

And if you would not be decayed, consult the paper of your trade, which preaches hope in forty styles, and always stands for sunny smiles. This, Supply Dealer, is the plan, that helps the modern business man.

— Walt Mason.

# The RETAILER

## Concrete Storage Bins for Sand and Crushed Stone

For the purpose of taking care of its rapidly growing business and extending to its customers the best possible service, the Builders' Supply Co. of Cumberland, Maryland, has built a very interesting and complete storage plant for sand and crushed stone. The sand deposits and stone quarries owned and operated by this company are situated on the Western Maryland railway, about three miles from the city. The material is delivered to their city yard on hopper bottom cars, which formerly were run over an elevated trestle and dumped into their storage yard, from where the sand and stone were loaded into wagons by hand. With a view of not only increasing the storage capacity, but obtaining a more rapid and economical method of handling the material, the Builders' Supply Co. made an extended investigation of the different types of storage buildings in use selected a set of reinforced concrete bins.

The building is constructed entirely of reinforced concrete and is 83 feet 9 inches long, 30 feet 6 inches wide and 56 feet 8 inches high to the top of the roof slab. A head house, 11 feet 6 inches high rests on the roof slab, making the total height 78 feet 2 inches. The first story forms a support for the bins and contains two driveways running under the bins lengthwise of the building. Each driveway is 9 feet 6 inches wide and has a clearance of 9 feet 8 inches in height to accommodate the largest auto delivery truck. The piers on which the columns and side walls rest extend above the level of the driveways and form a curb, the edges of which are armoured with steel, and the exposed corners of the columns are encased with angle iron to prevent wear from the trucks.

A warehouse is now being built adjoining one of the driveways and it is arranged to have a loading platform extending under the bins on a level with the first floor of the warehouse to facilitate the loading of mixed loads of building materials and also allow the loading and deliveries to be effected in stormy weather. Openings are left through the outside wall of the driveway on the opposite side of the storage building for windows and doors.

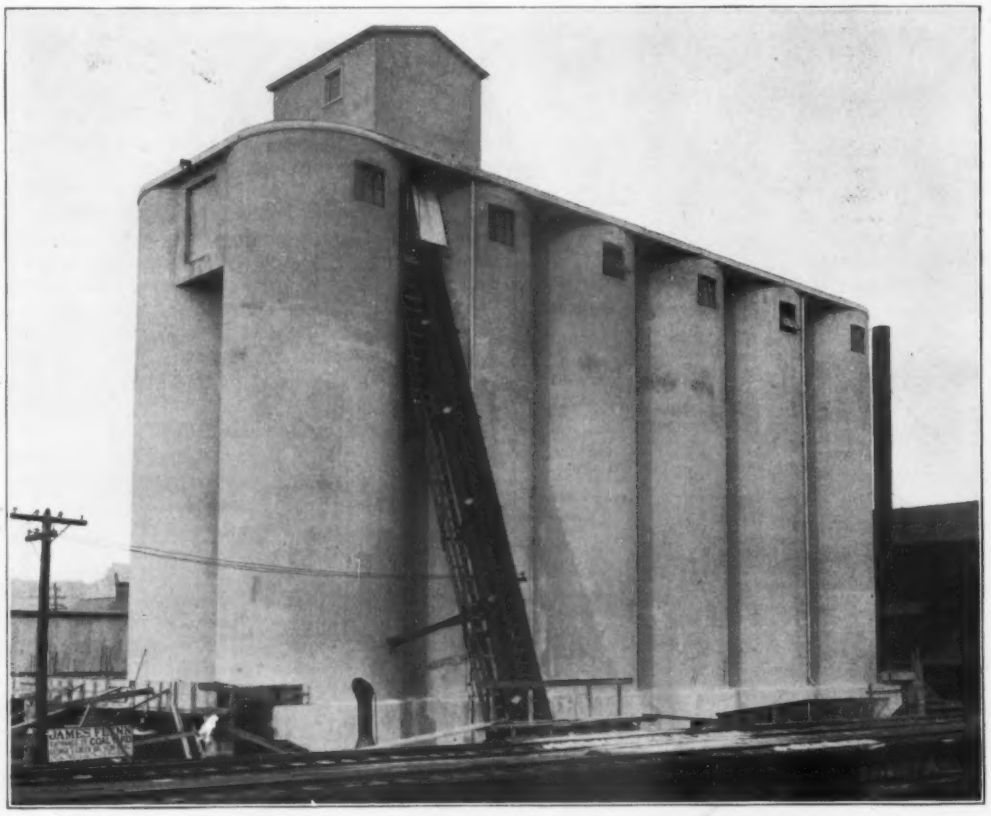
On account of the limited room at the ends of the structure and to permit better turning facilities for the large auto trucks on entering and leaving the building, the first story was shortened and the bins designed to extend over the foundation line. Above the driveways and forming the bottom of the bins is a heavy reinforced concrete slab, through which are openings and spouts for loading wagons and trucks. Each bin is fitted with a heavy cast iron, especially designed spout with undercut valve and operating lever arranged so that the driver can control the loading of the material in the trucks.

The bin story is divided into 12 circular bins, 14 feet in diameter and 36 feet deep, arranged in two rows of six bins each, and forming five interstice bins that are utilized for storage. The bin walls are monolithic, and were constructed continuously day and night by means of a moving form, provision having been made to enclose the walls and protect the concrete with steam heat during the cold weather.

Above the bins and formed by the continuation of the circular walls is a cupola, which contains a concrete walk extending longitudinally over the bins. The cupola is covered with a concrete roof slab, above which is built a pent house, enclosing the elevating machinery and motor.

The openings at the ends of the driveway are fitted with Wilson steel roller doors, and Lightwell steel windows with ribbed wire glass placed on each side of the cupola, and at the end is a large metal clad door to provide for removal and replacing of machinery.

The building and machinery equipment are arranged so that sand and crushed stone can be received in hopper bottom cars and dumped into a track hopper at the side and near one end of the building. After being deposited in the hopper the material is fed through a spout with controllable gate into a double strand chain bucket elevator, which conveys the material to the top of the building and discharges it into a spout with a special turnhead. This turnhead connects with spouts leading direct into the nearest bins and also discharges on a belt conveyor that runs lengthwise of the building over the bins. The belt conveyor is fitted with an especially designed heavy steel tripper with spouts arranged to discharge into the different bins.



CUMBERLAND BUILDERS' SUPPLY CO.'S SAND AND STONE STORAGE SYSTEM.

The walk over the bins is fitted with steel hand rails and necessary platform, and ladders are provided to give access to the machinery.

The power is furnished by two General Electric motors with belt and gear connections. The storage building was designed and erected by Deverell, Spencer & Co., Garrett building, Baltimore, Maryland. The machinery was furnished by the Weller Manufacturing Co. of Chicago.

The Builders' Supply Co. is to be commended for its progressiveness and foresight in making this extensive improvement. It shows the desire of its officers to have adequate facilities to enable them to give customers good material and prompt deliveries. Charles E. Schaidt is president and William P. Roeder is secretary and treasurer of the company. The company has been in business the past five years and each year the books have shown an increase of 50 per cent over the preceding year.

### BELGIUM AS A SOURCE OF SUPPLY.

Belgium is said to rank first among the countries of Europe as a source of supply of rock and clay products. During 1914 the exportations to Holland on fireproof tile alone from a small number of cities amounted to $1,723,000.

Among the various quarries those of South Belgium are of the utmost importance because of their lime-producing qualities. In addition to lime there is an annual production of $4,000,000 worth of crushed stone from these quarries, which is sold under the trade name of "petit granit." Fifty per cent of this stone is exported. Considerable quantities of limestone are found in the Ardenne mountains and extensive lime industries are at Doornik and Peruwelz. Hennegau is famous for its modern and extensive hydrated lime plants.

Near the Bandour and Morialme vast clay beds are to be found. The principal production of the clay plant is brick, tile, and other building requirements.

## Successful Personality.

Fred W. Upham, president of the Consumers Co., one of the largest concerns in the world engaged in the business of builders' supplies, coal and ice in a retail way, and one of Chicago's most remarkably successful business men, says that physical endurance is the best asset that a young man can have, along with ambition, to achieve success in the commercial world. The Chicago American, a daily paper of local distribution, succeeded in securing from Mr. Upham the following intensely interesting interview for publication:

"I should say that the greatest element essential to success in Chicago is physical strength—stamina," declared Mr. Upham.

"The loop takes a frightful toll in vitality. You may not hear the elevated trains pass, nor the surface cars clatter along, but they are shaking the buildings and rattling your nerves just the same.

**Need Your Strength.**

"You need every ounce of strength you have to beat this game. Poor physical condition means shattered nerves; shattered nerves mean shaky judgment; shaky judgment means business disaster.

"I used to think that the two years I spent piling lumber up in Marshfield, Wis., at $1 a day was wasted time, but I have always thanked my stars that it took me out in the open air at nineteen, just at the time I needed constructive exercise.

"My grandfolks came from old Massachusetts stock. My grandfather's children all worked, putting seats in chairs, as was the custom in those days.

"I was born in Racine, Wis., whither the family had located after grandfather had decided that Racine would be a bigger and better town than Chicago because of its harbor facilities—that was in the day before the Broadway Limiteds.

"Father was the oldest of the family that came West, his brother, Will Upham, who became governor of Wisconsin, the youngest. They both went in the civil war and fought their way through from 1861 to 1865.

"When father returned he opened up a little merchandising store in Shawano, Wis. That was at the headwaters of the Wolf river—and there was formed the Upham-Russell Lumber Co.

"I went to college at Ripon, Wis., and made the mistake of quitting after my freshman year. I went to Marshfield for my vacation and there the call of the lumber yards lured me away from school. I have always regretted the years I missed.

"It had been apparent to me that I was not cut out for a professional man, and I gladly went to work at $1 a day in the lumber yard.

"Do you know," remarked Mr. Upham, as though he had suddenly discovered the greatest financial error of his life. "I must have worked in that lumber yard a couple of years without a raise in pay? My lodging and board was only $2.50 a week, and I thought I was doing pretty well.

**Becomes Foreman.**

"Then I saw that to earn more money I would have to assert myself. It was not long before I was foreman of a lumber gang. In another year or two I was superintendent of the lumber yard with about 150 men under me.

"That gave me the chance to sell to customers who were in the market for lumber. The result encouraged me to believe I could sell lumber 'out on the road.' I realized that the valuable man to a firm is the man who brings in the orders, not the man who spends all the profits.

"My first big bill of goods was sold to the Curtis Bros. Co., at Clinton, Ia.

"In time I became vice-president and general manager of the Upham Manufacturing Co., and so far as future with that firm and in that environment was concerned I was all done.

"My salary was $3,600 a year; a big figure in those days. I had saved $12,000—and I had either to get into the bigger game in Chicago or content myself with the small town limitations.

**Picks Out Chicago.**

"I chose Chicago. I knew that to make big money I had to be where big money circulated. Somehow the walking to work and carrying my lunch never appealed to me. So when I moved in, the first thing I did was to join the Union League, In two years I was a director and in five vice-president.

"My mind had been made up that I was going to work for Fred W. Upham. A great many of the

FRED W. UPHAM.

men I knew or wanted to know belonged to the Chicago Athletic Club. I joined that.

"Politics always appealed to me, so I joined the Marquette Club up on the North Side—being a Republican.

"It wasn't long before somebody suggested that I run for alderman of the old Twenty-second ward. I was busy making money in the lumber business, and declared that I did not have the time to get acquainted.

"The less they know about you, the better your chances are for being elected," my advisers told me. I was pitted against one of the 'gray wolves' of the council and beat him. George E. Cole and Graeme Stewart induced me to run.

"When I took office I found that the work of an alderman requires something beyond conversation and absent treatment. So I selected two young men, divided my salary between them, and introduced them as deputy aldermen. If there was a pavement being laid or a garbage pile overlooked, they were daily on the job. My constituents liked that kind of attention.

"Fred Busse induced me to put $5,000 in his coal company, and that started me off on public supplies. Today the Consumers Company has 7,000 employes, uses 1,600 delivery horses and ninety motor trucks.

**All-the-Year Work.**

"When I went into the coal business I soon found that to make a profit you had to have all-the-year work for your men if you expected to keep your organization together. Eventually the City Fuel Co. and the Knickerbocker Ice Co. were consolidated.

"In 1898 I became a member of the Board of Review for the county of Cook, and was twice elected, serving fourteen years in all. Roy O. West and F. D. Meacham sat with me."

"And to sum it all up, what have you to pass along to the young men of today?" was asked as Mr. Upham prepared to disappear into a directors' meeting.

"It's all a question of physical endurance," he answered as he dashed through a swinging door.

## Old Structure Remodeling Furnishes Material Demand.

Louisville, Ky., May 5.—The conversion of old-style residences into apartment buildings, which has been a feature of the building situation here for several years, is still a noticeably large factor, and real estate men say that the prospects favor much more of this work being done in the south central district. The big brick houses which were formerly occupied by the first families are practically off the market as renting propositions, and the only chance for the owner to get anything on his investment is to remodel and make a two- or three-apartment building out of it. All of this work makes business, and the dealers are consequently pleased.

The Kosmos Portland Cement Co. has landed one of the biggest orders of the year, a 36,000-barrel contract having been given it by the United States Government. The bids were taken April 19, the material being required for work on the dam at West Point, Ky. The Kosmos company is in a good position to handle the business on account of its plant at Kosmosdale, Ky., being close to West Point. It is likely that the cement will be delivered to the job in barges. The Kosmos company is furnishing the cement for the new Ford plant in Louisville, which is to be a reinforced concrete proposition throughout.

The brick display of the Union Cement & Lime Co. is attracting considerable attention. Demand for all of the building materials handled by the company is improving, and the outlook for the spring trade is regarded as excellent.

## Eastern Pennsylvania Dealers at Philadelphia

Final preparations are being made by President George Erich and other officers of the Building Material Dealers' Association of Eastern Pennsylvania for the special meeting of that body, which will be held at Philadelphia on May 11. J. L. Durnell, Philadelphia manager of the Charles Warner Co., is looking after the Philadelphia arrangements for the coming meeting.

The influence of this association, which is a little more than a year old, is being felt throughout Eastern Pennsylvania and as retailers realize the importance of coöperation between men in kindred lines of business the membership becomes gradually augmented. It is believed that Secretary Cox will be in a position to report a nice increase in membership at the coming meeting.

## Del-Mar-Col at Wilmington May 20

Announcement has been made by Secretary J. Grason Steffey that the next quarterly meeting of the Del-Mar-Col Building Material Dealers' Association will be held at Wilmington, Del., on May 20. This association includes in its membership retailers in the states of Delaware and Maryland and the District of Columbia.

Having been organized less than a year, members of this association have been able to convince builders' supply dealers of the district which it covers that in combating trade evils an organization of this kind is absolutely necessary. This association has joined with others in taking up the question of the proper differential in the sale of cement. In addition to studying the cement situation, the proper purchase and resale of other commodities has been discussed. Its officers and members have had considerable experience with credit associations and as a result are in a position to materially help those who have not become educated on these particular topics.

The Citizen's Supply & Elevator Co., Cleveland, Ohio; capital, $50,000; builders' supplies; C. J. Hodous and others.

# NEWS of the TRADE

## Chicago Building at a Standstill.

The building material situation in Chicago is worse, if at all changed from the condition of two weeks ago. A number of additional unions affiliated with the building trades have either declared strikes or been locked out by the employers, and practically all building is at a standstill.

In spite of the unpleasant situation confronting this city at the present time optimism seems to prevail, based on the belief that in the very near future employers and members of the unions will get together for a peaceful settlement.

The number of building permits and their valuation issued during the month of April reflects the conditions of affairs. There were but 754 permits issued last month with a total valuation of $6,820,700, as compared with 1,090 permits with a valuation of $9,465,800 for April, 1914. Among these, however, are several for structures costing upwards of $100,000.

During the past fortnight announcement has been made that a part of Chicago's lake front will be reclaimed and in the near future this city will boast of a little Venice. It is believed that 16 acres of ground for apartment house uses will be available. George K. Spoor, the moving picture magnate, is back of the plan.

The Methodist Book Concern has been authorized to erect a six-story building at Rush and Superior streets at a cost of $275,000.

Members of the Chicago Hebrew Institute are raising $300,000 for a new administration and school building to replace the present structure.

Plans are being made for a new $2,500,000 club house for the Chicago Athletic Association. It is believed the building will be 18 stories in height and occupy the present site at Madison street and Michigan avenue.

The Chicago Women's Club has decided to erect a $500,000 home which will probably be built on Michigan avenue.

Monday, April 26, was "Prosperity" day in Chicago. On that date Mayor Thompson was inaugurated after one of the largest and longest parades in the history of Chicago. Practically every industry in the city was represented in the parade, many coming with decorated wagon and automobile floats. Among the firms who were represented in the procession were: The Chicago Union Lime Co., The Lake Sand Co., The Garden City Sand Co., The Essen Sand & Gravel Co., the Patent Vulcanite Roofing Co., and The Builders' Club, of which practically every building material man in Chicago is a member.

Following the "Prosperity" day parade the C. M. & St. P. railway made preparations for the building of 2,000 freight cars at a cost of $2,000,000 and let contracts for new sleeping cars to the extent of $250,000. In addition to this, improvements and purchases will be made by the St. Paul road, the total expenditure amounting to $5,250,000.

### NEW YORK PLAN FILINGS.

New York, May 4.—General conditions in the financial world are greatly improved. This is having its effect upon building, but there are still some spots where construction is retarded, as, for instance, in Manhattan, where building reports show that not more than 67 per cent of the plans being filed are actually moving ahead. Bronx borough, in the same city, reports about 89 per cent of the plan filings moving ahead to construction. Brooklyn and Queens are moderately active, but with heavy plan filings.

### RATPROOFING INCREASES DEMAND.

New Orleans, La., May 4.—The recent decision of the Supreme Court at Washington, albeit the ratproofing cases, has certainly helped matters out some and has succeeded in keeping cement, sand, gravel and brick moving freely and at good prices. New Orleans is passing through her great "reconstruction" period. Since the outbreak of a few bubonic plague cases more than a year ago, 50,000 residences, business houses and public buildings have been ratproofed, and there are that many more structures to come under the magic wand.

Property owners fought the right of the state and city authorities to command the ratproofing of their properties, and a test case was dragged through lower courts in New Orleans all the way to the highest tribunal at Washington. The decision, upholding the right of the state and city to order ratproofing, was only rendered last month, and it had the immediate effect of swamping building material men with orders.

Cement, sand and gravel of the cheaper grades enter into ratproofing work, while brick is used in the chain walls that must surround each structure thus treated. Competition is very strong, and as one prominent retailer expressed it, "we're cutting each other's throats." There is a healthy demand for Southern cement, that grade being used principally in ratproofing.

The market for lime has been increasing little by little.

Gypsum and plaster in extremely large quantities are to enter into the construction of the new Jewish Synagogue at Lafayette and Baronne streets, and in the new Noah's Ark in Canal street. Building material men have their eyes on these two large contracts.

Crushed stone is moving slow and the contractors report that there is much more of a demand for gravel instead. Sand and gravel is being used in the paving of eight New Orleans' streets, and in this connection it may be noted that under New Orleans' commission form of government contracts for the paving of no less than 60 streets are to be let.

### CHANGE IN BUILDING LAWS.

Extensive changes in the building code of Portland, Ore., are in contemplation. The building inspector has submitted a number of changes to the city council and it is understood that these will be adopted substantially as suggested. One of the changes will require that any factory or workshop three or four stories in height shall be built of semi-fireproof materials and that similar buildings five or more stories in height shall be of fireproof materials. A section is to be added to the code providing that a sack of cement shall be a cubic foot and that sand and gravel are to be measured loose.

Colonial Construction Co., Ltd., St. John, N. B., Can.; capital, $25,000; to manufacture and deal in lime, cement, brick, etc.; John M. Long, Lancaster, St. John, and others.

## Pittsburgh Faces Building Strike.

Pittsburgh, Pa., May 4.—The one topic of conversation here the past few days has been the building strike. The brick layers went out for $6.00 per day. Following them the hod carriers, the mortar mixers, the scaffold builders and higher grades of building laborers also went out for 45 cents per hour. It was announced yesterday by the unions that about 4,300 men were out. It is a question whether the other trades will go along and help the strike or not. A large proportion of the brick layers were not in favor of striking at this time and the same is said to be true of other trades.

In neighboring towns the demands of the trades for higher wages have been refused in several cases. The stone masons have come to an agreement and will likely go to work tomorrow. It is hardly thought probable that a general strike will result, but this will not be known before next week.

The fear of a building strike evidently influenced building operations in April. The month showed a decrease of 453 permits, to cost $974,283, from April, 1914, and a falling off of $1,006,997, as compared with March, 1915.

The Birmingham Supply Co. reports a very good trade in building supplies on the south side and especially in the South Hills district. Building jobs are scattering and manufacturing plants on the south side are doing less construction work than usual. Prices are about normal.

The East End Builders' Supply Co. reports lower prices for cement and sewer pipe. This company is remodeling its offices and making other improvements to its plant.

Keller Brothers, big east end retailers, announces that trade is about the same as last year. March and April made some little improvement. This company does not look for any long strike among the building trades.

The D. J. Kennedy Co., which has three big yards in this city, does not fear any building strike that will last long. Its business is running a little ahead of that of 1914. Building is taking more material than street work. Cement prices are very low and sewer pipe is also selling for less than last year.

### MORE BUILDERS' EXCHANGES FOR THE SOUTH.

The general movement for "A Greater South" that has been under way for the past year by commercial and industrial bodies is speeding with great rapidity and it is gratifying to note how the building fraternity has kept pace with the rapidly increasing agriculture, stock raising and other industries that have sprung up and which the Southern states are so much in need of.

During the past three months, at least four cities adjacent to New Orleans have organized Builders' Exchanges. Their incentive being, better buildings and closer co-operation between those who hold the making of better buildings possible.

D. E. Jett, Joe Stone, R. H. Bartels, and other men of prominence in Mobile are organizing an exchange in their city, and expect to have their organization complete in about 30 days. They have engaged quarters at 63 Dauphin street, and will occupy the entire second floor with offices, committee and display rooms, where building materials can be shown to good advantage.

## Building Repairs to Help Business.

Boston, Mass., May 4.—As a result of the work of the city building inspection since Jan. 1 enforcing the laws governing exits and fire escapes, conditions on more than 125 buildings have been corrected. The inspectors have visited 1,250 buildings during the four months. During the year, it is estimated, 1,000 condemned buildings will be torn down and twice as many repaired according to the building department's recommendations.

Building supply houses truly are getting their 1915 "second wind." In every place visited within the past two weeks this part of the story at least is exactly the same: "The state of business is better than this time last year; more goods sold to date than last year and prospect holding good." Municipal orders, it is conceded, with a lesser margin, perhaps, held up the early months. The dealer trade bought largely in January when there were such attractions in low prices. Salesmen on their second rounds find stocks depleted and are turning in orders that prove it.

Brick and steel are probably moving the bulk at present. The local building rush just now in the line of smaller structures all over the city is most heavy in brick stores and garages.

Boston, Mass., May 4.—Some uneasiness prevails in building circles owing to demands by the Carpenters' District Council for a five-day week. The carpenters came to bat with this proposition in an insistent way late in April, and while at the present it is understood that allied trades are not of the same mind, the situation is one not enjoyed by contractors, with about $15,000,000 worth of building on their hands and with the season just getting into good swing. The Master Builders' Association felt that this was a poor time to make demands for shorter hours and more pay. The present schedule is 55 cents an hour and the week 44 hours. With Saturday forenoon knocked off, as proposed, the wage demand is the equivalent of 61 cents an hour.

It was thought all along that May 1 would be reached and passed without any particular trouble. All other trades, practically, made adjustments. The carpenters blew along with their proposition like a tempest out of a clear sky. The builders regarded that they had helped out a severe unemployment situation splendidly with more than usual continuance of building through a favorable open winter. Workmen did their share, too, with rebates. Owing to this condition the Carpenters' District Council called for a referendum vote May 1. This is expected to be completed and the result announced the last of this week.

## Warmer Weather Aids Business.

Cincinnati, Ohio, May 5.—Warm weather, improving industrial conditions and the advance of the season, all combined, have undoubtedly helped the building and material trades here, but, so far, they have not resulted in any great rush of business, especially of the larger sort.

Somewhat inactive business, considering the favorable outlook, is the report of the Moores-Coney Co. The company has landed several very nice orders lately. A representative who visited several of the Pennsylvania brick plants whose products are handled by the company states that most of these plants are operating on full time, and that they regard the situation as good, although they all have considerable stocks on hand left over from the winter's business, which seems to have been below normal, as might have been expected.

"Business is opening up, and prospects seem to be about all that could be asked," is the way Robert P. Harkins, of the Cincinnati Clay Products & Supply Co., views the situation. The company, like other retailers of building supplies in the local field, has received a number of orders for supplies for local use, but the total volume of business in evidence so far is not large.

The Pursell-Grand Co., whose display room in the Mercantile Library building, now complete with removable brick panels, terra cotta trimming, and metal-framed stained-glass doors is a thing of beauty, reports quiet business, with good prospects for much livelier times later on.

## English Conditions Better Than Anticipated.

In a letter to ROCK PRODUCTS AND BUILDING MATERIALS under date of April 13, Martin Van Straaten & Co., building material dealers of London, state that the general conditions of the building trade have been much better in that city since the outbreak of war than was anticipated even by the most optimistic dealers of the city.

"At the outbreak of the war," says the letter, "there was of course a momentary upheaval, which was principally due to the action of the government in taking over the railroads for military purposes. Consequently, a great deal of work was brought to a sudden standstill for want of materials, which could not be conveniently conveyed from the plants to the dealers and from the dealers to the building sites. Because of the same lack of railway facilities a number of plants were forced to curtail their output when coal for their operation was not forthcoming.

Public work was pushed with all possible speed so as to counteract any temporary setback in employment, but after a short time this action proved to be superfluous because of the large number of recruits among the workmen. The only branch which suffered somewhat was domestic architecture; but, speaking generally, the condition of the building trade proved to be far better than was anticipated at the outbreak of hostilities.

"Imports from Belgium have of course come to an entire standstill. We learned from reliable sources that trench work in that country has been carried on most elaborately and with full regard to sanitation, for which purpose the clay products of Belgium plants have been used.

"We are afraid that a good many factories on the continent have been destroyed for military purposes or otherwise and this will hamper the industry considerably when the present crisis is over. We feel sure, however, that matters will be reconstructed quickly and that there will be no difficulty in finding the required capital for our brave allies."

Martin Van Straaten, head of the London concern, has for the past three months been investigating building conditions in America. He sailed for home on the Lusitania leaving New York on May 1.

That there is slight possibility of the builders and carpenters of Reading Pa., getting together on their differences seems to be the verdict of those in a position to know. The Builders' Exchange will soon hold another meeting, when the demands of the carpenters will again be taken up. The carpenters, it is declared, want a five-cent increase, amounting to 45 cents per hour for an eight-hour day, with Saturday a half holiday; 68 cents per hour overtime; 90 cents an hour on Sundays or legal holidays.

The Paragon Structure Co, 125 East Front street, Plainfield, N. J.; deal in building materials and supplies; capital stock, $25,000; incorporators, all of whom reside in Plainfield, are: I. Baily Hill, eight shares; Jessica T. Hill, one share, and Allen H. Diman, one share.

The Hamilton & Stotter Co., Cleveland, Ohio; builders' supplies; capital, $10,000; William Rockwell, G. W. Elsasser, J. F. Meyer, E. A. Hahn and M. M. Roche.

## Export Trade in Building Materials.

The era of rebuilding which will follow the establishment of peace may open new markets for American manufactures. This fact makes important a special compilation of the Bureau of Foreign and Domestic Commerce, Department of Commerce, which enumerates representative articles making up our foreign sales of construction materials and articles necessary for the equipment of buildings and factories.

Our exports of materials used mainly in the building trades in the fiscal year 1914 were valued at approximately 150 million dollars, though more recent months, following the outbreak of the world war, show a marked decrease. With industries in some sections of the world seriously disturbed or actually paralyzed, it is reasonable to expect that American exports of building materials will upon the termination of the war find more outlets and greater markets.

The following table shows the value of lumber, steel and builders' supplies exported from the United States in the fiscal year 1914.

| Articles. | Value. |
|---|---|
| Boards, scantlings, shingles and sawed timber | $66,278,014 |
| Structural iron and steel | 12,533,063 |
| Pipes and fittings, wrought | 14,337,973 |
| Builders' hardware | 6,031,879 |
| Cement | 3,382,282 |
| Paints, varnish and white lead | 3,148,705 |
| Doors, sashes, trimmings | 1,794,013 |
| Roofing felt | 1,029,127 |
| Hair | 1,085,038 |
| Fire brick | 976,335 |
| Leather belting | 879,604 |
| Tiles (except drain) | 779,323 |
| Marble and stone | 676,723 |
| Building brick | 623,115 |
| Plaster | 283,325 |
| Lime | 200,437 |
| Sand | 188,999 |
| Roofing slate | 188,057 |

Complete details of the various markets to which these products are shipped are published in "Commerce and Navigation of the United States, No. 1914," sold by the superintendent of documents, Washington, D. C., at $1.00 a copy.

### NEW INCORPORATIONS.

New York City Composite Brick Corporation, Manhattan; general brick, concrete and terra cotta building materials; capital, $200,000; incorporators, R. C. Peck, A. McCausland, 111 Broadway; L. M. Fisher, 129 Wadsworth, New York City.

Rufus Darrow's Son, Inc., Roseton, N. Y.; brick, cement, etc; capital stock, $3,000; Daniel Darrow, of Spuyten Duyvil, and Henry J. Jova and Edouard Jova, of Newburgh. This company will open an office and yard in New York at the corner of Forty-ninth street and Eleventh avenue.

Contractors & Builders' Material & Supply Co., Texarkana, Texas; capital stock, $1,000; incorporators, J. O. Wright, Ike Heilbron, R. P. Dorough.

Gernert Stump Co., Inc., Hoboken, N. J.; deal in building materials; capital, $10,000; incorporators, Herbert E. Gernert, A. Herman Stump, Howard W. Ford, Hoboken.

H. E. Putnam, Inc., of Hartford, Conn.; make and deal in brick, stone and building material, etc.; capital stock, $50,000; commence business with $35,000; incorporators, H. E. Putnam and Mary L. Putnam, both of Hartford, and Daniel R. Ward, of South Manchester.

The Adrian Lumber & Supply Co., Adrian, Mich.; capital stock, $12,500.

Continental Cement & Materials Co., St. Louis, Mo.; capital, $1,000,000; incorporators, C. E. Ellis, 30 Bond street, Columbus, Ohio; H. G. Young, Freeman Carts, V. H. Stewart and Homer Gray, Charleston, W. Va.

The Fred Stone Co., Union, N. J.; deal in timber, lumber, brick, stone, cement and other building materials; capital stock, $125,000; incorporators, Fred Stone, of Union; Eva M. Dubois, 8 Sidney place, Newark, and John F. Faughnan, 164 Market street, Newark.

## Brazilian Market for Building Materials.

Durability, availability and price are weighed carefully in the selection of building materials in this country, where the cost of most materials, labor and land is high, especially in the large cities of the coast, says Consul General Alfred L. Moreau Gottschalk, of Rio de Janeiro. These considerations and suitability for this climate have made stone and brick the principal building materials in Brazil.

**Growing Popularity of Wire Cloth.**

Wooden laths for the inside of buildings are unknown, except in the interior of the country, where they are used to a limited extent. Inner walls are usually finished by applying the plaster to the brick walls. In the case of partitions (most of these being also of brick, but some occasionally of wood) the plaster is applied directly to the boards. Wire cloth (expanded metal) has grown in popularity in Brazil for the application of plaster in business buildings as well as residences. This material has in the past been imported chiefly from England, France and Germany, but its present lack has not been felt materially by reason of the financial depression through which Brazil has been passing and which has curtailed construction work.

**Lime—Plaster Board—Plasterers' Wages.**

Lime used in the manufacture of plaster is locally produced, the principal sources being the states of Minas Geraes and Sao Paulo. Prominent architects and builders state that its quality is inferior, but that the use of foreign lime is not possible because of the prohibitive customs duties.

The use of plaster board for interior finishing is unknown here. Whether it could be successfully introduced and would take foothold as a staple article in construction work in Brazil is a matter of conjecture. A campaign of education would be necessary with a new and untried article, but this would not be a serious obstacle, as novelties of all kinds find access to this market each year.

Plasterers, who are also capable of doing fancy decorative work, receive only seven to eight milreis ($1.75 to $2 at the present rate of exchange) per day. The plastering and kindred trades are not organized into unions here.

**Municipal Supervision of Buildings.**

As in many American cities, building construction is under municipal supervision. The architect or builder (in many cases the same firm serves both purposes) prepares the plans, which are submitted to the municipal authorities, and if the specifications are in accordance with the regulations a permit to build is granted. The regulations have particularly in view public health, cubic air space per capita, proper distribution of light, etc.

**Market for Gypsum—Packing.**

It is believed that there is opportunity for American manufacturers who are not seeking large orders all at once to enter the field and at least make known certain American products that have heretofore been locally regarded as obtainable only from European countries. Powdered gypsum has been imported from England, Germany and France in considerable quantities. Since the outbreak of the European war this trade has been shifting partly toward Italy and not at all toward the United States. The channels of trade between certain European ports of shipment and South America have not been closed by the war. The European countries that have remained neutral are the present competitors of the United States in South America, and are diligently improving their opportunities.

Gypsum (invoiced from England as "fine plaster") furnished by England, France and Germany is shipped in barrels, 358 pounds gross weight, 350 pounds net weight (barrels iron-bound and cross barred and oil-paper lined). Brazilian importers and buyers are usually very solicitous, by reason of reselling requirements in the market, customs regulations, etc., about uniformity in the sizes and packing of such staples.

**Terms of Payment—Credit Ratings.**

Large architects and contractors state that the United States has enjoyed only a small share of the trade in many lines of imported building material because of the usually higher American prices (although the quality of the goods is admittedly superior) and the unwillingness of American firms to extend the liberal credits allowed by European houses. The usual credits here on building materials may be said to consist of a 90 days' sight draft attached to the shipping documents, although six to nine months is not an unusually long credit term for German firms to grant.

Builders would probably obtain supplies from the United States if the customary credits were granted. A more satisfactory arrangement to American houses than the 90 days' draft from date of acceptance would be a 120-day sight draft from the date of shipment, which virtually does not extend the credit (counting 30 days for transit of a freight steamer with stops), as the date of payment (often prolonged by the importer when he feels that he may not be able to meet the obligation at the expiration of 90 days) becomes fixed and the consignee is bound to pay or permit his mercantile standing to suffer.

American firms can obtain credit ratings from R. G. Dun & Co., 290 Broadway, New York City, who receive reports on the financial responsibility of Brazilian firms from their local branch in Rio de Janeiro and agencies in other parts of the country. Additional facilities in the matter of credits and collections will be afforded by the early opening of the Rio de Janeiro branch of the National City Bank of New York.

(Lists of local importers of wire (expanded metal) who might be interested in wall board, and importers of gypsum may be obtained from the Bureau of Foreign and Domestic Commerce or its branch offices.)

## Lighterage Rates to Stay.

New York, May 1.—This was the date that a new system of charges on all freight passing through New York harbor on lighters or floats was to have gone into effect, but word was received from the Interstate Commerce Commission at Washington that the matter will be allowed to lay over until the first of November.

The change was proposed by the railroad companies terminating in this harbor and city. It is claimed by them that the freight is now being moved from place to place in this harbor at a loss. The New York Association of Dealers in Building Supplies has been an important factor in contending against any advance and representatives have been in Washington protesting against the proposed increase. The proposal involved all kinds of building materials coming into Manhattan and the Bronx from points west and south.

According to the announcement of the railroad companies all "lighterage free" freight received on lighters or barges, or delivered from lighters or barges, at piers other than station piers of the railroad companies, will be handled to or from string piece or to or from vessels' slings by the railroad and a charge of 12 cents per ton, net or gross, as rated, will be assessed on all such freight in addition to the rate applying from or to the point at which the property is received or delivered.

In case of shipment the actual weight of which is less than the carload minimum weight, but on which the carload rate and the minimum weight have been applied in order to secure the benefit of free lighterage, the charge above described will be assessed on basis of the carload minimum. When the lighterage service is performed by outside lighters or barges the charge of 12 cents per ton will be collected and retained by the railroad company, except as noted in the following paragraph:

"The railroad company, at its option, will arrange with the shipper or consignee to load or unload the freight, and when such service is performed by the shipper or consignee an allowance will be made of not to exceed 12 cents per ton, net or gross, as rated, the captain of lighter or barge to file with the lighterage department a statement that the loading or unloading was performed by shipper or consignee, as the case may be."

Under the tariffs now in effect the railroads are required to put the stuff over the string piece to effect a delivery, and under these proposed new regulations tying up to the dock constitutes a delivery, the unloading to be done by the consignor or consignee; or, if done by the railroad company, a charge of 12 cents per ton is added to the freight.

### RATE CASES UP JULY 6.

Washington, D. C., May 6.—The Interstate Commerce Commission today announced that arguments upon the proposed increase in Western passenger fares will be heard in Chicago before Commissioner Daniels on July 6.

### C. W. HULL CO. RECOVERS.

In a case against the Atchison, Topeka & Santa Fe and the Missouri Pacific railroads, the Interstate Commerce Commission decided that C. W. Hull Co. was charged unreasonable rates on carload shipments of Portland cement from Independence, Kan., to Arnold and Stapleton, Neb. Reparation was awarded.

### ACME COMPLAINT DISMISSED.

The complaint of the Acme Cement Plaster Co. against the Grand Rapids & Indiana Railway Co., on the minimum weight of wall plaster from Jeffersonville, Ind., to Bowling Green, Ky., has been dismissed by the Interstate Commerce Commission, which held that a minimum weight of 60,000 pounds was not found to have been unreasonable or unduly prejudicial.

### TO ARGUE REINFORCEMENT RATES.

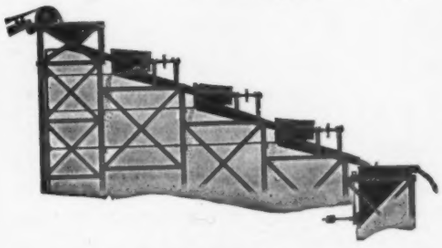
An opportunity will be given all interested persons to present their arguments for more just freight rates before the Western Classification Committee 10:30 A. M., May 24, at 1875 Transportation building, Chicago, relative to iron or steel reinforcement for concrete or plaster. It is believed that the expanded metal lath manufacturers will be well represented at this hearing. At 2 P. M. on the same day shippers will be given an opportunity to present arguments relative to the shipment of concrete sculpture or statuary packed in barrels or wooden boxes.

### ROADS TO FIGHT CANAL FOR FREIGHT.

Washington, D. C., May 4.—That trans-continental railroads purpose to meet competition via the Panama canal by making rates that will divert freight to points just east of Pacific coast terminals for distribution was made clear in hearings before the Interstate Commerce Commission recently on the adjustment of rates in so-called back-haul territory. Shippers from all parts of the country appeared before the commission. The shippers, however, were unable to agree among themselves as to the readjustment and when the hearing adjourned the question appeared as far from a satisfactory settlement as at any time during its consideration in the last 15 years.

# Practically All the Washed Gravel Used Today Is Produced by the "S-A" Gravel Washing Plants

Our plants are located in all parts of the country and are operating successfully under all conditions. We originated the general type of plant, used now exclusively, and we have adapted our system to the requirements of three hundred practical producers.



## Typical Arrangement

This arrangement of Gilbert Screens provides for any number of sizes to be produced at a cost about equal to dry screening. Very little power is required by these screens and their capacity is greatly increased by washing the stones through the perforations. The material passes by gravity thru the system of screens to the sand settling tank.

## The Improved Gilbert Screen

Perfect separation is secured by material working against a stream of water. The capacity is greater than that of a dry screen or one in which the flow of gravel and water is in the same direction.

It is the only screen that has given uniformly successful results with all condition of gravel.

*Write us today for information.*

***Our Engineering Department*** We maintain a department thoroly experienced in the design of gravel washing systems. We will be glad to study your special conditions

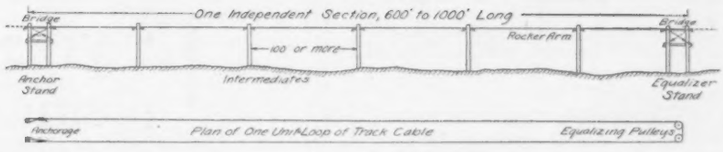
## STEPHENS-ADAMSON MFG. CO.

AURORA, ILLINOIS

NEW YORK CHICAGO PITTSBURGH BOSTON HUNTINGTON, W. VA. LOS ANGELES ST. LOUIS TORONTO DETROIT SALT LAKE CITY



# Fast Construction By Sections




The LAWSON TRAMWAY, being normally built in short, independent loop sections, lends itself very easily to rapid construction in the field. The diagram illustrates the general idea.

Each loop is of convenient length determined by conditions and may range from 600 to 1000 ft. The loops terminate in equalizer stands and anchor stands alternately placed.

In organizing to construct a tramway of, say, several miles in length the real unit of construction is not the whole tramway, but merely *one loop section*. As an extreme case therefore, when plenty of help is available, the whole tramway can be built in the time that it takes to build *one loop*, simply by assigning a crew of three to five men to a single section — all under charge of a general foreman. Each crew therefore will have to build only one stand and from five to nine intermediate supports—and string and strain the cables thereon. Where the ground is open and with easy digging a week will usually suffice to build 1000 ft. The same operation being carried on simultaneously on all other sections—a separate crew in the meantime framing up and setting the two terminals—it follows that when sufficient help can be commanded a complete tramway of any practical length can be built in the time it takes to build one of its loop sections.

Of course things do not always work out as smoothly as this for rapid construction nor is it always economical or indeed necessary. The point is, however, that in emergency work the time of construction can be enormously shortened over that required for any other tramway which must necessarily be built as a whole.

Respectfully yours,

61 BROADWAY
NEW YORK

## AMBURSEN COMPANY

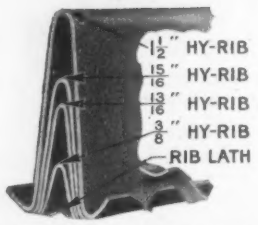
TRAMWAY
DEPARTMENT

Following is one of the full page advertisements appearing in leading architectural, engineering and contracting publications.

# HY-RIB *and* RIB-LATH

## THE COMPLETE LINE OF GREATEST POPULAR DEMAND

Ask any man in the building line the name of the best known and most widely advertised Metal Laths and Reinforcements. The answer will be Hy-Rib, Rib Lath and Trussed Concrete Steel Company. Owners ask for them, architects specify them and contractors want them. You make friends by handling Hy-Rib and Rib Lath—products that are half sold before they are delivered. We have everything in the line of Metal Lath, Steel Studs, Concrete Reinforcement, etc.




*It's the Strength of the Ribs That Counts*

**The Complete Line**

1½" Hy-Rib in 3 gauges.
15/16" Hy-Rib in 4 gauges.
13/16" Hy-Rib in 3 gauges.
¾" Hy-Rib Lath in 3 gauges.
Beaded Plate Rib Lath in 3 gauges.
Standard Rib Lath in 3 gauges.
B Rib Lath in 3 gauges.
Detroit Diamond Lath in 4 gauges.
Pressed Steel Channels in 4 sizes.
Hy-Rib Hollow Studs in 3 sizes.
Corner Beads in 4 types.
Metal Base Screeds of 4 types.

### SECURE OUR QUOTATIONS

Before you buy a dollar's worth of Metal Lath, secure our prices, samples, etc.

*We Want to Show You*

**Trussed Concrete Steel Co.**
**Albert Street, Youngstown, Ohio**

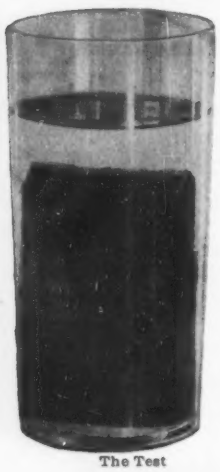
KAHN Building Products
TRUSSED CONCRETE STEEL CO.

The Slab

# Let Your Customers Make This Test

Send for a few slabs of Ceresitized cement or concrete and give them to your customers. Tell them to put the slab in a tumbler of water—keep it there a week, a month or a year. Then tell them to remove the slab and break it. They will be surprised to find it *bone-dry*—absolutely no penetration of water; *a result impossible without effective waterproofing.*

Or we will tell you how to make your own waterproofed slabs with CERESIT, so that you can perform the whole test *right before their own eyes.*



The Test

This is just *one* of the *many* ways in which we cooperate with dealers. Our proposition is worth investigating. The demand for CERESIT Waterproofing Compound is *increasing daily.*

*Write for full details.*

**Good, Steady Profits in These:**

**Weatherwear Roof Coat, Floor Hardener, Damp-proof Plaster Bond, Damp-proof Coating, Stone Backing and CERESITOL. Learn all about them.**

**Ceresit Waterproofing Co.**
**924 Westminster Bldg. Chicago**

CERESIT
TRADE MARK REGISTERED

The Result

IF you knew positively that you could free yourself from further bag trouble, and all delays and waste of money, you certainly would take steps toward that end. The Bates System Valve Bagger with valve paper bags for sacking Cement, Lime, Plaster, Alca, Ground Stone, etc., will do the work you want automatically and accurately fill and weigh every sack. 150 tons per day of lime—one machine.

*Write for Particulars.*

**The Urschel-Bates Valve Bag Co.**
TOLEDO, OHIO
BRANCH PLANT: NIAGARA FALLS, ONT., CAN.

# KisselKar Trucks Always on the Job

KisselKar Trucks are invariably spoken of by drivers and garage men as the best trucks they know.

And it's true that a KisselKar Truck is of better material, better built, better balanced than the average truck. It is a staunch, powerful, dependable, scientifically constructed vehicle—**one that is always on the job.**

KisselKar Trucks are furnished in six sizes and with bodies to suit any business or special requirement. The loading capacities are 1500 lbs., 1, 1½, 2½, 3½ and 6 tons, respectively.

# KISSELKAR TRUCKS

## In Six Sizes

Intelligent care is exercised by the Kissel Motor Car Company to furnish the **exact** truck needed by a customer.

Individual conditions, as well as those common to the line of business to be served, are minutely considered and advice given accordingly.

**Write fully regarding your haulage problem —the mileage, the loads, the nature of cargo, the condition of roads, the number of stops, your present haulage equipment and all other facts that bear. AND DON'T FAIL TO ASK FOR OUR ILLUSTRATED PORTFOLIO.**

**Kissel Motor Car Co., 548 Kissel Avenue, Hartford, Wis.**

New York, Chicago, Boston, Philadelphia, St. Louis, Milwaukee, St. Paul, Omaha, Minneapolis, Cincinnati, Pittsburgh, Cleveland, Detroit, San Francisco, Los Angeles, Seattle, Buffalo, Rochester, Columbus and 300 other principal points.

Stairway, C. A. C. Club, Cleveland, O.
J. Milton Dyer, Architect.

# EXCELSIOR CAEN STONE CEMENT

offers the alert dealer a new field for profit. Let us tell you about it.

*Prices, illustrated booklet and sample panel on request.*

**The Cleveland Builders Supply Co.**

*Manufacturers*

Leader News Building **Cleveland, Ohio**

**? ARE YOU A LIME, CEMENT, STONE, OR SAND AND GRAVEL PRODUCER ?**

**Our Service is for You** We are Engineers—Designers of Sand and Gravel Washing Plants—Manufacturers of Dull's Tubular Washer, Cableway Excavators, Screens, Conveying Equipment, Pulleys, etc. See our full page advertisements in the previous and next issue of ROCK PRODUCTS AND BUILDING MATERIALS, or write today to our Chicago office.

**The Raymond W. Dull Company, 1912 Conway Bldg., Chicago, Ill.**

**WELLER-MADE**

Duplex Bin Gates

**DELIVERY GATES**
Undercut Overcut Duplex
Plain or Special
**SCREENS :: ELEVATORS**
Everything for handling Sand, Gravel and Crushed Stone
**Weller Mfg. Co., Chicago**

Undercut Bin Gates

**CLINTON MORTAR COLORS**

The Standard for More Than a Quarter of a Century.

They embody

**QUALITY, STRENGTH and DURABILITY**

Have stood the test of over

**THIRTY YEARS**

Metallic Paint, Mortar Colors, Roof Cement, Etc.
Prices and detailed information furnished on request.

**Clinton Metallic Paint Company**
CLINTON, N. Y.

# AMERICAN CEMENT PLASTER COMPANY

General Offices: Lawrence, Kansas. -::- -::- Branch Offices: Toledo, Ohio. Ft. Dodge, Iowa.

MANUFACTURERS OF

**Wall Plaster, Wood Fiber Plaster**
**Molding and Dental Plaster**
**Finish Plaster**
**Wall Board and**
**Gypsum Partition Tile**

**AGENTS FOR BEST BROS. KEENE'S CEMENT**

(Advertisements Like This One Makes the North Western Line Easy to Sell)

CHANNEL LATH

Kno-Burn

Kno-Fur

XX Century

**These 4 Brands of Lath Come in 56 Styles**

## One Account Means Less Book-keeping

And that cuts down your overhead and puts more money on the profit side of the ledger.

Our 4 brands of lath cover the field completely. Our National advertising has educated the public to their merits. We can ship promptly from our nearest distributing point. Our prices are always in line with the quality of the product.

All the North Western brands are made with the famous "Kno-Burn" mesh that imbeds itself in the plaster for absolute permanence. They have survived the most severe tests for fireproof quality. They are easy to apply and easy to plaster over.

Let us send you literature and prices today.

Act **now** and be ready for Spring business.

**North Western Expanded Metal Co.**
**929 OLD COLONY BLDG., CHICAGO, ILL.**

# CONCRETE

## Youngstown to Have Large Reservoir

The city of Youngstown, Ohio, is building a reservoir for the purpose of impounding an adequate water supply to take care of the future growth of that wonderful steel city. This is one of the great undertakings which will be brought to completion during the present season. The work was started last spring by Louis Adovasio, contractor of Youngstown, upon plans designed by City Engineer F. M. Lillie, whose assistant, W. M. McCartney, is constantly on the job to construe the drawings and specifications and to inspect the progress of the work.

Several years ago agents of the city began acquiring land in the upper reaches of the Mahoming river, where previous surveys had indicated that an adequate artificial lake could be constructed by means of extensive excavation and damming the Mahoming river at a point that will put no less than 10,000,000,000 gallons of water into constant storage. Such a supply will make possible a daily flow in the river at the driest periods of the year of 100,000,000 gallons.

Hundreds of acres of the most fertile farming lands in the upper Mahoming river valley will be submerged in making this artificial lake, which will have a surface of fully 2,000 acres, being about one and one-half miles wide and six and one-half miles long. The depth in places will be over 45 feet. The construction of the dam is the interesting engineering feature of the great undertaking. It will range 3,000 feet across the valley and 650 feet of the dam will be of solid concrete, to meet the direct force of the current, and will be provided with an apron and spillways. Dykes at both ends will be constructed of the earth provided by the excavation and will rise 46 feet and be 160 feet thick at the base. The spillways will be 10 feet thick at the summit, tapering in a spillway to waste at the base on a very oblique angle. Along the upstream base a string of sheet piling, dovetailed together, has been driven into the solid rock. Behind this there is a thick concrete apron, while to the rear of this there is a clay puddle, which is said to add much strength to the base of the structure.

In order to provide for the dry weather flow from the basin when the natural flow of the stream will not maintain a supply of water running over the spillway, there are four pipes, five feet in diameter, provided through the base of the concrete structure, which will be mechanically operated. Through one of these, with the base and fill, 100,000,000 gallons of water can be drawn into the stream every 24 hours. The cost of changes in roadways to accommodate the reservoir and the need of longer bridges in several places will make a total contingent expense of several hundred thousand dollars. The cost of 3,304 acres of land purchased by the city for reservoir purposes amounted to $235,000. The estimated cost of the dam when completed is $550,000, the entire undertaking on the part of the city of Youngstown totaling no less than $1,000,000. About $210,000 worth of the work on the dam has been completed and a large force of men has started operations, with the intention of bringing the work to conclusion early in the fall. It is estimated that this big job will require 75,000,000 barrels of cement, being furnished by the Crescent Portland Cement Co., of Wampum, Pa., and supplied by the Youngstown Ice Co., 180,000 cubic yards of filling, 51,000 cubic yards of concrete, 29,000 cubic yards of rubble masonry, 43,000 square feet of concrete facing for the earth dam, 200 tons of steel, 45,000 square feet of expanded metal, 700 tons of sheet piling and many other items, nearly all of which are being manufactured and supplied by Youngstown manufacturers. The reservoir is located 17 miles directly west of the city, at the extreme northwestern corner of Mahoming county, and is designed to take care of present needs and future needs for 10 years to come.

The waterflow of the Mahoming river is all-sufficient for any possible industrial needs, except at the dry periods of the year. The need for the reservoir has been occasioned by the variation in the stream, which makes it almost run dry at times, while in flood season the flow would be sufficient for all possible needs if the flood waters could be conserved, so as to be made useful during dry periods. Therefore, it is possible that the future growth of the city will develop the needs of further reservoirs to store up the excess waters which run through the river in flood seasons. If this is done, there is plenty of water supply for any possible requirement that the industries of the city can ever develop.

In a later article will appear a completely illustrated description of this interesting piece of hydraulic engineering.

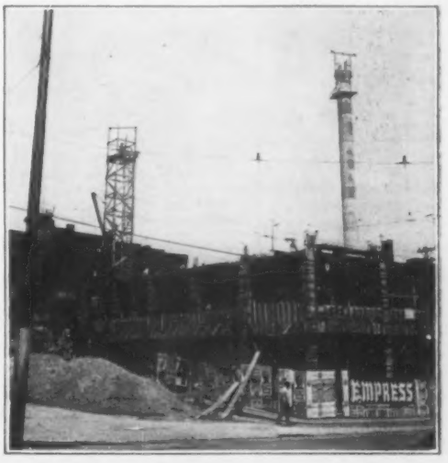
### DEDICATE NEW CONCRETE ROAD WITH CHAMPAGNE.

Chicago celebrated Good Roads Day on April 22 by formally dedicating the four and one-half miles of concrete road laid last summer in Milwaukee avenue. Chicago good roads enthusiasts motored to the town of Niles, where the exercises were held in the presence of 1,000 Cook county residents.

Miss Jeanette Pohlman broke a bottle of champagne over the pavement and a procession over the new road was commenced. Speakers during the day included George Horrer, president of the Niles Improvement Association; August Geweke, president of the Cook County Truck Farmers' Association; Peter Reinberg, president of the county board, and William G. Eden, president of the Associated Good Roads Organizations of Cook County.

### KANSAS CITY'S FIRST CONCRETE STACK.

The stack on the Graphic Arts building, at Tenth and Wyandotte streets, is one of the first of its kind ever constructed in Kansas City, being built entirely of concrete reinforced with steel. It is forty-two feet high, with an inside diameter of 42 inches. The base measures about 16 feet.




CONCRETE STACK ON KANSAS CITY BUILDING.

The stack above the base is cylindrical and does not taper. The Pratt & Thompson Construction Co. is doing the work on this building, which will be of reinforced concrete. The plant will furnish all the power and heat for the building and the tenants.

F. B. Moudy, of Portage, Pa., is fitting up a plant 28 by 56 feet at that place to manufacture concrete building stone.

SITE OF THE MILTON RESERVOIR AT YOUNGSTOWN, OHIO.

# Edison Answers Maligners of Concrete

When on December 9 last a destructive fire visited the plant of Thomas A. Edison, Inc., at West Orange, N. J., considerable interest was expressed in the condition of the structures comprising the plant after the fire, because the plant was widely advertised during the period of its construction as being largely built of reinforced concrete. It was taken for granted generally that, due to the very well-known interest the eminent inventor had taken in the subject of the manufacture of cement and its use in concrete construction, the buildings comprising his own plant at West Orange would be something near the last word in such matters.

The usual superlative expressions used by the enthusiastic representative of the metropolitan daily press have become more or less stereotyped in the descriptions of fires and fire losses. These were used without limit in the accounts that were printed in all of the daily papers of the 10th and 11th of December, and the Associated Press dispatches circulated out of New York used very much the same verbiage in all the papers throughout the country. Such expressions as "The entire plant was completely gutted," and "the huge concrete buildings were enveloped in flames, seeming to burn like tinder," were freely used. These excited the attention of overzealous and interested industrial writers who took it upon themselves to enlarge upon the meager foundation of facts contained in such puerile descriptions, until many of them actually made themselves foolish by publishing illustrations which of themselves contradicted the statements made concerning them. The descriptive phrases referred to were so foolish when applied to fire in connection with a concrete building as hardly to merit mention by any one familiar with the composition and character of concrete, but yet in the minds of the unitiated it is possible that a false impression may have been created.

As stated in these columns immediately after the fire, the one impression that came foremost to the expert mind in looking at the Edison plant the very first day after the fire was that the view constituted a most vivid endorsement of concrete construction, demonstrating as it did practically every claim that has been made for concrete as an absolute fire-defying material of construction. Every one of the concrete buildings stood out clearly defined and only slightly damaged upon the most rigid technical inspection.

Of the seven reinforced concrete buildings in the plant 87 per cent of them survived in good condition; every other building was a total loss. In less than 30 days from the date of the fire new window frames and sash had been supplied in several of these buildings, the machinery was running and the plant started in operation, and in another 30 days practically all of these buildings were performing the overloaded function of carrying the entire business of the institution before it was possible to clear away the tangled debris of the other buildings of the plant. All of the new buildings to replace those destroyed are being constructed with reinforced concrete because this type of building was the only kind that survived the fire and was thereby proved to be the only economical material with which to construct new additions.

Recently Mr. Edison observed an article published by interested parties which he considered so untrue and unfair that he took occasion to dictate a letter and send it to a number of editors as his expression of contradiction to such malicious publications as were pointing their endeavors to destroy the valuable and humanitarian work that has been done by the cement manufacturers and the concrete industry generally to give to the world the benefits of concrete construction as a fire-resisting material well worthy of consideration for many essential and indespensable purposes in the field of construction. A fac-simile of Mr. Edison's letter is published herewith.

Cable Address "Edison New York"

*From the Laboratory of*

*Thomas A. Edison,*

Orange, N.J. April 28, 1915.

To the Editor of Rock Products,

Chicago, Ill.

Dear Sir:-

The Detroit Brick Manufacturers and Dealers Association is distributing throughout the United States a pamphlet entitled "The Edison Fire", the contents consisting of a re-print of an article appearing in a trade journal, "The Clay Worker". The entire purpose of this publication is to discredit, and if possible, retard the use of reinforced concrete in the construction of fire-proof buildings.

The results of the fire at my plant on December 9th, 1914, are used in an entirely false and misleading manner. Of the seven reinforced concrete buildings none were destroyed. A small section of the upper floor of one of the buildings fell in, but was supported by the lower floors. The pamphlet referred to presents three views of this, the suggestion being that they were of three different buildings. The brick administration building to which they refer, which remains standing, was protected by an adjacent concrete building and was not subjected to the fire.

Every brick and steel building which was attacked by the fire was completely destroyed, together with all the machinery they contained, while the damage done to the concrete buildings amounted to about 12½ per cent, and of the machinery contained in the concrete buildings 98% was saved and is now in operation. Manufacturing was resumed in some of the old concrete buildings within a few weeks after the date of the fire.

Temperatures were far in excess of those in the ordinary fire, but reinforced concrete showed its superiority over any other fire resisting material.

I regret that any representative of the brick interests should have seen fit to sponsor this publication, the evident purpose of which is to deceive. The millions of dollars of fire losses in this country annually make it a matter of moment that the superiority of reinforced concrete for fire-proof structures should be thoroughly understood, and it is for such purpose that I have written this letter.

Very truly yours,

Thos A Edison

## FARM JOURNAL BOOSTS CONCRETE.

An interesting article entitled, "Concrete for Permanence," and advocating the use of this material for inclosure walls, as well as for farm buildings, appeared in the May first issue of "Country Gentleman," a weekly farm publication with a national circulation.

An entire page was given to a description of the manufacture of concrete fences and buildings and illustrations, sufficient to guide even the novice, appeared.

The following formula for concrete was printed in a conspicuous place: "One part cement, two parts sand, four parts broken stone or screened gravel. This should be thoroughly mixed by turning over with a spade and should contain enough water to make it mushy. Use the best grade of cement. After pouring in the mixture, work a spade up and down between the wooden forms and the mixture; this will force the gravel towards the center and leave a smooth surface when the frames are removed."

## TO RENEW CONCRETE BLOCK BUSINESS.

Kansas City, Mo., May 5.—Cement building blocks are coming into favor again, in due course of time and experience, and machinery will be on hand to manufacture them in Kansas City at the plant of at least one firm that was in the business several years ago. The Kansas City Coal & Material Co., at its coal yards at Nineteenth and Holmes streets, has a stack of blocks that have been weathering the storms for several years. One of its barns is built of these block and there are a few buildings in which the blocks were used. The company made these blocks in a plant at these coal yards, but the plant was dismantled. The concrete floor remains in one corner of the yard and the machinery is stored. "We are sitting tight," said a man connected with the company. "After some of the buildings holding these blocks, either built of the blocks or trimmed with them, have stood the test of 10 years people will be willing to order them. Then we will be prepared to enter the game again." The cement block business fitted in nicely with the coal trade, filling the entire year with activity, and using the delivery equipment and office force to full efficiency.

## PROPOSED CONCRETE BRIDGES.

The West Springfield (Mass.) Business Men's Association is promoting and has received drawings from W. J. Howes, architect, and Bliss & Lavalle, engineers, for a concrete bridge across the Connecticut river at Springfield, Mass. The plan makes provision for a bridge 70 feet wide. The plan presented calls for a bridge of seven spans. A 3 per cent grade leads to the center of the bridge from each end. The structure will start from the harbor line on each side, which is 30 feet farther out in the river than the abutments of present bridge. This would give a grade of 5 per cent from the point in the roadway directly beneath the railroad bridge to the eastern end of the river bridge. The center span would be 37 feet above mean low water, which is sufficient to cover the navigation laws. The bridge will carry two car tracks.

The erection of a concrete bridge, to cost about $21,000, over the Spokane river at Nine Mile, Wash., instead of the proposed steel and wooden span, has been urged upon the board of county commissioners by Deputy County Engineer Charles McClung. The proposed concrete span would be 150 feet in length, with reinforced concrete approaches.

The market place of the building material industry. Employment department, machinery wanted and for sale, etc. If your wants are not answered in this page, write a letter to this office.

**THE FRANCIS PUBLISHING CO.**
537 S. Dearborn Street Chicago, Illinois

# :: THE :: BOURSE

Advertisements will be inserted in this section at the following rates:

For one insertion.....25 cents a line
For two insertions.....45 cents a line
For three insertions.....60 cents a line

Eight words of ordinary length make one line. Heading counts as two lines.
No display except the headings can be admitted.
Remittances should accompany the order. No extra charges for copy of paper containing the advertisement.

## EMPLOYEES WANTED

### EXCELLENT OPENING

For capable man to superintend the erection and take charge of crushing plant in Virginia. Want man with $5,000 to $10,000 to invest, and his salary will be in keeping with stock purchased. Address Box 1054, care ROCK PRODUCTS AND BUILDING MATERIALS.

### HELP! HELP! HELP!

LET US HELP YOU.

We want employers who are looking for good help to advertise in the "Wanted Employees" column, because we know that they will get good results. ROCK PRODUCTS AND BUILDING MATERIALS.

## EMPLOYMENT WANTED

WANTED—Position as superintendent of lime plant by consulting engineer on induced and forced draft kilns. Experienced operator of Quarries, Crusher, Pulverizer, hydrator and cooperage. Highest output with lowest maintenance and operating costs. At present employed. Address Box 1049, care ROCK PRODUCTS AND BUILDING MATERIALS.

Capable Engineer, available at once, as superintendent or mechanical engineer on cement, lime or allied industries. Fifteen years' experience. Can show results. Address "T.," care ROCK PRODUCTS AND BUILDING MATERIALS.

WANTED—Permanent position as accountant. 10 years' experience as timekeeper, commissary clerk, bookkeeper, buyer, etc. Also several years' experience as foreman and general foreman of concrete, excavation and quarry work. Address Box 1051, care ROCK PRODUCTS & BUILDING MATERIALS.

WANTED—Position as Superintendent or would accept a position as Foreman of crushing plants or Lime. Thoroughly experienced both clerical and practical. Address Box 1052, care ROCK PRODUCTS AND BUILDING MATERIALS.

### ARE YOU LOOKING FOR EMPLOYMENT?

A small advertisement in the Employment column will make your wants known and help you to get a position. No difference what kind of a job you want—advertise in ROCK PRODUCTS AND BUILDING MATERIALS, as the paper is read by the people you want to reach. QUICK RETURNS.

## MACHINERY WANTED

FOR SALE—Star Lime Co. plant at Hannibal, Mo. A good first-class plant, four lime kilns, all necessary sheds for storage, and cooper shop, with switch track on the ground. About 100 acres land with the plant, or would dispose of the kilns, and quarries and a part of the land. A bargain for quick sale to any one wishing to engage in the manufacture of lime. STAR LIME CO., Hannibal, Mo.

### AN OPPORTUNITY—SAND LIME BRICK PLANT FOR SALE.

Ideally located—16 miles from Philadelphia on Atlantic City R. R. Capacity 20,000. Operating under the silo system and making a first-class brick, perfectly white. Plant includes one 150-h.p. Boiler and 100-h.p. Engine, one Rotary Press and one Upright Press. One 72-foot cylinder.

A GOOD PAYING PROPOSITION.

Excellent reason for selling.

PENBRYN BRICK CO., Bridgeton, N. J.

FOR SALE—Fine Gravel Plant, equipped with first-class machinery for crushing, screening and washing gravel. Located just outside the city limits on Big 4 R. R. at Dayton, Ohio. WASHED GRAVEL & SAND CO., Dayton, Ohio.

FOR SALE—Concrete block plant and gravel pit, including a five room house at a bargain. $1,600.00. Reason for selling, bad health. Address ED MASSE, 112 Washington St., East Stroudsburg, Pa.

## PLANTS FOR SALE

WANTED—One 10-h.p. Motor and Starter complete. Have for sale one 60-h.p. Boiler and one 20-h.p. Boiler. Boiler is on skids and engine is stationary. Address Box 1053, care ROCK PRODUCTS AND BUILDING MATERIALS.

## MACHINERY FOR SALE

FOR SALE—Second-hand double Hercules Cement Block machine in good condition. P. O. Box 57, Batesville, Ind.

### CONCRETE MIXER FOR SALE.

One practically new Cockburn Style B concrete mixer with D. C. Erie engine and 12 H. P. separate boiler. Cost new $1,200. Only used for building one plant of 2,800 cu. yds. Will sacrifice for quick sale at $395 on cars point in Pennsylvania. CHAS. N. BRAUN, 1511 E. Lewis St., Fort Wayne, Ind.

FOR SALE—Best empty cement bag baler, smallest price. Also brick and block machines. Address W. BARTEN, Gordon, Nebr.

FOR SALE—We can save you TWENTY-FIVE to FIFTY Dollars on a concrete Mixer. High grade machines, fully guaranteed. Get our prices before you buy. SUPERIOR MFG. CO., 1406 Concrete Ave., Waterloo, Iowa.

### ATTENTION—QUARRYMEN!

For Sale—No. 0 Thew Steam Shovel. Shape No. 541.
WILLIS SHAW MACHINERY CO.,
N. Y. Life Bldg., Chicago, Ill.

### Quarrymen! Do you need a crusher?

We have many bargains to offer in good "used" crushers, large and small, gyratory and jaw type.
Also Locomotives, Cars, Locomotive Cranes, Air Compressors, Hoisting Engines, etc.
Let us know your needs and you will hear from us promptly.

WM. B. GRIMSHAW CO.
693 Drexel Building, PHILADELPHIA, PA.

### RAILS

all sizes—small or large lots. New and relaying. We are familiar with quarry requirements and know just what you need. Frogs, switches, splices and all track accessories. Immediate shipment from stock.

L. B. FOSTER CO.
PARK BUILDING PITTSBURGH, PA.

## Your Attention

directed towards the fact that you have a machine or two laying about the plant or factory that could be disposed of to the right party and turned into money, would prove profitable from all standpoints.

The mission of

## The Bourse

is to perform this service for you at the lowest cost. Send in your list of second-hand machinery TODAY.

**IMPORTANT!** We ask the co-operation of our advertising patrons in the matter of getting changes of copy for their ad into this office at an early date.
Advertising copy for issue of the 7th should be mailed us not later than the 25th of the month preceding.
Changes of copy for the 22nd issue should be mailed not later than the 10th of each month.
In complying with this request you will permit of ample time in which to have your ad set and receive proof for O. K., or corrections.

**The Francis Publishing Company, 537 So. Dearborn St., Chicago, Ill.**

# CEMENT

## Receives 2,500,000-Barrel Order.

Toronto, Canada, May 5.—Probably the largest cement order ever placed on the American continent outside of the Panama Canal contract has just been placed by the Canadian Government with the Canada Cement Co. for the Welland Canal. F. P. Jones, general manager, states that this order amounts to 2,500,000 barrels. At present only two of the 13 plants of the company are working, namely one at Port Colborne and another at Montreal.

The following figures relating to Canada's consumption during recent years of Portland cement were prepared by the Department of Mines:

**Canadian.**

| Calendar year. | Barrels. | Percent. |
|---|---|---|
| 1910 | 4,753,975 | 93 |
| 1911 | 5,692,915 | 90 |
| 1912 | 7,132,732 | 83.3 |
| 1913 | 8,658,805 | 97.1 |
| 1914 | 7,172,480 | 98.7 |

**Imported.**

| Calendar year. | Barrels. | Percent. |
|---|---|---|
| 1910 | 349,310 | 7 |
| 1911 | 661,916 | 10 |
| 1912 | 1,434,413 | 16.7 |
| 1913 | 254,093 | 2.9 |
| 1914 | 98,022 | 1.3 |

**Total.**

| Calendar year. | Barrels. |
|---|---|
| 1910 | 5,103,285 |
| 1911 | 6,354,831 |
| 1912 | 8,567,145 |
| 1913 | 8,912,988 |
| 1914 | 7,270,502 |

### ATLAS TO REVIVE RIVER TRAFFIC.

New Orleans, La., May 4.—A revival of water transportation on the Mississippi river between New Orleans and St. Louis and points in the Middle West, is promised within a few days by the Atlas Transportation Co., an allied concern of the Atlas Portland Cement Co., in a statement issued May 1 by two officials of the latter company, who have been in New Orleans discussing the situation. The revival will mean much for cement exportation, but just as much for other lines. The Atlas Transportation Co. will operate a fleet of 16 barges to the city, carrying freight from the Atlas Portland Cement Co.'s plant at Hannibal, Mo., to New Orleans. Two tow boats are constantly plying on the Mississippi in this service.

"With our barges we shall provide safe and direct transportation to and from New Orleans," said an Atlas official, in the city for a conference with Crescent City shippers, "and of course we will take a little longer in the delivery perhaps than the railroads, but the difference in transportation charges will more than offset this." The Atlas official thinks river traffic is about to enter upon its greatest stage of development. The Atlas Portland Cement Co. claims to be a pioneer in the recent development, having in three years sent 100,000 tons of cement down the Mississippi to New Orleans, using only five barges. Eleven more barges are to be added, making the total fleet 16.

### AUSTRALIA FACES CEMENT SHORTAGE.

Reports from Australia continue to complain of a shortage of cement in that commonwealth. The Australian mills are working to capacity and arrangements are being made to secure some from New Zealand; but it now appears that the United States will be called upon to make up the greater part of the deficiency caused by the cutting off of German importations. For several years preceding the breaking out of the war Australia imported upwards of a million and a quarter dollars worth, of which amount only about one-half of one per cent was from the United States.

## Some Factors of the Price War.

New York, May 4.—Albert Moyer, general sales manager of the Vulcanite Portland Cement Co., has compiled a tabulation showing in the abstract something of the losses that have been endured by the companies that have been cutting prices here. Briefly stated his observation is as follows:

"Plants manufacturing one or two million barrels of Portland cement a year have practically the same overhead, as far as administration, sales cost and similar expenses are concerned. The depreciation on a 2,000,000-barrel plant is $150,000 a year. Should a plant with a capacity of 2,000,000-barrel ship 1,000,000 at 57 cents, mill, the cost of overhead and depreciation each being figured at $150,000 will be $300,000, and if it sold cement at 75 cents mill it would lose $120,000. Should such a plant attempt to increase sales, thereby reducing overhead and manufacturing cost, it would have to reduce the selling price, selling 1,500,000 barrels at a manufacturing cost of 55 cents, and at a selling price of 65 cents represents a loss of $150,000, the same overhead and depreciation being figured as for 1,000,000. Multiply this loss by the number of plants that have been selling cement at extremely low prices and you get some idea of the cost of this price war to cement manufacturers."

### MARKET FOR CEMENT IN THE AZORES.

American manufacturers of Portland cement now have an excellent opportunity to enter the Azorean market and to build up a business that can be retained. The island of St. Michaels uses about 6,000 barrels of cement annually, and, in addition, 2,000 or 2,500 barrels a year will be needed for several years for the breakwater. A large theater is being built, which will call for a heavy supply of cement within a few months; the exact amount is not known now.

In order to get this business, American firms will have to land cement in the Azores at a price that will compete with those asked by European firms. Most of the cement now being used here is English, and is either a "Robbins" brand, sold by a cement society of London, or the product of G. B. White & Co. This cement averages 396 pounds to a barrel and is now quoted at 6s 3d ($1.52) f. o. b. London. The freight from London is 3s 9d ($0.91) a barrel, plus a war risk of about five per cent. Before the war this cement was sold at 5s 8d to 6s ($1.38 to $1.46) and the freight was 3s ($0.73). Both German and English firms sell cement here on three and four months' credit and pay an agent's commission of three per cent.

Samples, prices, and all other information should be sent as soon as possible to Cesar d'Oliveira, St. Michaels, Azores. Correspondence may be in English, but letters written in Portuguese will receive preference.

George Land, of Lexington, Ky., has the contract for the cement to be furnished on the big freight house of the Louisville & Nashville Railroad, which will be built there.

## What the Manufacturers Are Doing.

The Canada Cement Co. will shortly repair fire damage to its plant at Hull, Quebec, to cost $10,000.

After a shut-down of several months the Bonner Portland Cement Co. reopened its plant at Bonner Springs, Kan., late in April, giving employment to 175 men. Almost $50,000 worth of improvements have been made at the plant. A storehouse has been built and hereafter the plant can be worked in the dull season and the product stored.

The finishing end of the big Olympic Portland Cement Co.'s plant in Bellingham, Wash., resumed work in April, a comparatively small force of men being employed at first. On inquiry at the company's offices it was announced that there was every reason to believe the big mill would be running full blast again in about a month, full forces of men being employed both at the mill itself and at the quarry. Shipments will be resumed on a large scale.

The California Portland Cement Co., Los Angeles, Cal., is completing plans for a plant at Colton, Cal. The company has been awarded the contract by the San Bernardino County Highway Commission for furnishing cement up to 200,000 barrels for the proposed road system, for which $1,750,000 in bonds have been voted. The contract price is $1.34 per barrel.

It was announced last month that the New York and New England Cement and Lime Co.'s plant at Hudson, N. Y., would resume operations within a few days and that work would be under way in every department.

The plans for the reopening of the Phoenix Portland Cement Co.'s plant near Temple, Ariz., are said to be maturing rapidly. It was thought best to finance the company without the aid of outside capital and the company which was appointed to raise the necessary money is said to have made rapid progress and to have announced the early success of the plan.

The Cowell Cement Co., of San Francisco, Cal., moved to new quarters in the new Cowell building at 2 Market street.

The good roads committee of the Commercial Club of Hannibal, Mo., and members of the Marion county court met a few days ago at the Atlas Portland Cement Co.'s plant to discuss improvement of the road between Hannibal and Ilasco. While there they were entertained by the Atlas officials, who had a fine lunch for the party and later escorted them through the plant. The improvement of the road was discussed and it now seems certain that there will be considerable work done this year.

The board of supervisors of Springfield, Mass., awarded the contracts for cement to be used by the department of street and engineering to the Springfield Contractors Supply Co. for the cement to be delivered on the job, and to the Knickerbocker Portland Cement Co. of New York, for the carload lots to be delivered at the Summer street yard. Each of these concerns was low bidder on the deliveries as specified. The Springfield concern's bid on the cement to be delivered on the job was $1.62, with a rebate of 10 cents for each bag returned in good condition, while the Knickerbocker company made a bid of $1.50 a barrel in carload lots, with rebate of 10 cents for return of good barrels.

## BULK CEMENT ADAPTABLE ON SMALL AS WELL AS LARGE JOBS.

Time and again when approaching a bulk cement prospect he takes the position that bulk cement may be all right for large jobs where the yardage of concrete is sufficient to warrant special bins and handling equipment, but that he cannot afford to provide all this extra equipment for small jobs. That there is little foundation in the argument was shown in several jobs completed last summer. A typical example is the addition built to the plant of the Electric Elevator Co., by the Nelson-Enblom Co., at Minneapolis. Although the amount of cement in bulk on this job totaled only three carloads, the contractor found it so satisfactory and such a factor of economy that he has decided to use cement in bulk hereafter on all jobs regardless of size.

The essential features of the work were shown by the Universal Portland Cement Co., in Booth No. 12, at the recent Chicago Cement Show. A shed, constructed for the most part of scrap lumber and corrugated iron with a roof made of a large tarpaulin, served for storing the cement. Upon the arrival of a car of cement the tarpaulin was thrown back and the cement shoveled into the shed. At other times the tarpaulin served to protect the cement against the weather. When possible the wheelbarrow was wheeled directly into the shed alongside the pile of cement, loaded and measured. Otherwise cement was measured in a galvanized iron wash tub. Mixing and handling were carried on by the conventional methods except that all the cement required for each batch was delivered to the mixer by one clean quick dump from the wheelbarrow in place of the numerous unnecessary operations that usually are required to untie several sacks of cement and empty their contents into the mixer hopper.

Cement in bulk is entirely feasible on practically all classes of concrete work. At last year's show was shown an installation where the quantity of cement used was large enough to warrant erecting special equipment. While such equipment is not necessary on bulk any more than on sack jobs, it nevertheless makes the same saving that special equipment would make on a sack job. The examples portrayed in this year's exhibit refutes entirely all arguments that bulk cement is feasible only for small jobs.

## NEW COMPANY TO COMPLETE PLANT.

Oklahoma's new cement company, the Choctaw Cement and Lime Co., of Hartshorne, was incorporated last month. The capital stock of the corporation is $400,000 and consists of $200,000 preferred and $200,000 common. The incorporators and first directors of this company are as follows: J. A. Henry, of Altus; H. J. Serwinsky, C. S. Wingate, N. E. Tuell, all of Hartshorne, and H. R. Blauvelt, of McAlester. The full board of this company will consist of eleven members.

This company intends to buy and complete the cement mills located about a mile and a half south of Hartshorne, then to begin as quickly as possible upon the completion of construction work, which, it is thought, will be accomplished within the present year.

The name of the old company was the Choctaw Portland Cement Works. It was organized about five years ago and approximately $300,000 had been expended in construction work when, two years ago, work suddenly ceased and the company went into the hands of a receiver. S. L. Morley, Hartshorne banker and now a member of the state board of public affairs, was named as the receiver. Everything remained in idleness for more than a year, while the affairs of the bankrupt company passed quietly through the records of the federal court.

The project has been revived within the past few weeks through the efforts of Mr. Blauvelt, who has been promoting the plan to take up the work where the old company left off. He has assembled a majority of the stock of the former company, has arranged to permit former stockholders to save at least a part of their investments by entering the new concern, and is ready now to finance the completion of the cement factory.

## GERMAN CEMENT MANUFACTURERS REPORT CONDITIONS.

Reports from members of the German Association of Portland Cement Manufacturers at a recent meeting of that organization showed that membership is now held by 98 plants in that country, which have a total production of 42,050,000 barrels of Portland cement. As a demonstration of the effect the war is having on the manufacture of Portland cement in Germany, it was learned that there are at present in the army 50 directors, 406 office employees and 5,647 workmen of the Portland cement plants. Previous to the announcement of war 15 per cent of the total production of Portland cement in Germany was exported, but an embargo was placed upon this material last August, as it was believed that the cement would be needed for the construction of fortifications. Because of the large amount of cement on hand permission is being given the companies to export to neutral countries, providing all transactions are reported to the German Government.

## HAGER PLANS NEARLY READY.

New York, May 4.—Edward M. Hagar, who is organizing a nation-wide chain of Portland cement plants, has been in this city, at the Waldorf-Astoria, for some time, closing up the final arrangements for starting the big enterprise that is to be capitalized at $25,000,000.

When the representative of ROCK PRODUCTS AND BUILDING MATERIALS interviewed him at his hotel here, Mr. Hagar said that it was too early to make any announcement for publication, but he intimated that something of importance would be forthcoming before long. Pressed for an explanation as to what he meant by "before long," whether word could be expected within a week, month or six months, he smiled and said that he did not care to answer, but that the plans were well advanced.

"You know me well enough," he said, "to know that I never make announcements until I have a complete announcement to make. I have been extremely busy since I have been here this time and all I can say is that I expect to have something to say on the subject before long."

## UNITED KANSAS PROPERTY SOLD.

Iola, Kan., May 1.—The plants and property of the United Kansas Portland Cement Co. were sold at receiver's sale on April 24 to Dan F. Servey, of Iola, for $199,950, and he asked the court for permission to assign his bid to the Commerce Trust Co., of Kansas City, Mo. His motion was approved and the assignment made accordingly. The property consists of Portland cement mills located at Iola, Kan., Independence, Kan., and Neodesha, Kan. The plants were originally valued at approximately $1,500,000. While the Commerce Trust Co. now appears on the records as the purchaser of the United Kansas properties, there is an impression to the effect that the properties will be controlled by Leigh Hunt, George E. Nicholson and several associates of theirs, and it is stated that the Iola plant will be operated by the new owners, while those at Independence and Neodesha will be junked and disposed of. The final confirmation of the transfer will be brought up for certification before Judge Pollock at a hearing to be held at Fort Scott in the early part of May.

## CEMENT FACTORY IN INDIA.

Consul Henry D. Baker, of India, states that an industry for the manufacture of Portland cement is about to be started at Katni, in the central provinces of India, by the Katni Cement & Industrial Co. (Ltd.), which has now almost completed its works, which are intended to turn out from 30,000 to 35,000 tons per annum. The cement will be packed in bags and sold, it is said, at considerably lower prices than for imported Portland cement. The cement will be manufactured by the wet process in rotary kilns driven by electric power.

In addition to the cement works the company has erected works for the manufacture of roofing, ridge and ceiling tiles, glazed wall and flooring tiles, fire bricks, glazed drainage pipe from three to 30-inches diameter, glazed earthenware troughs for carrying electric cables, acid-proof jars, crucibles, and a number of hospital requirements.

Roofing tiles, fire bricks, and drainage pipes will be put on the market in a short time and the other articles mentioned will follow in due course. The agents of the company are C. MacDonald & Co., Cox's building, Hornby road, Bombay, India.

## EASTERN PLANTS ARE BUSY.

Portland cement plants in the Lehigh and Hudson valleys are operating close to 200 kilns and yet they are unable to catch up with demand. Three months ago there were only 60 kilns employed. So great is the demand for Portland cement from these zones Nos. 1 and 2 that it is not now so much a question of kiln capacity as of packing and shipping ability.

## CUTTING CONCRETE COSTS.

Six-penny nails and care on the part of those stripping forms have resulted in great economy to an Iowa bridge contractor. On one $4,700 contract, exactly $9 worth of new lumber was required. Practically all of the form lumber remaining after completion of the bridge went to the next job.

The methods by which this was accomplished were: Painting both sides of the new lumber with paraffine oil, costing 12 or 13 cents per gallon; using six-penny nails, especially for the under side of arches where stripping is difficult, and holding the foreman responsible for lumber spoilage.

The advantage of treating lumber on both sides with paraffine is that forms are much more readily stripped. No concrete sticks to them, nor are saws ruined in working up the lumber for the next job.

There are on the market thimbles which can be slipped over any nail and which serve the same purpose as double-headed nails. These provide a grip to pull the nails out of lumber to be used again. The cost of concrete construction can be greatly decreased by employing such methods. The cost of wasted form lumber is of no benefit to the country or town buying a bridge. Whether steel forms or better care of wood forms shall be the ultimate means of reducing concrete costs, it is impossible at this time to say. Each probably has its own field for maximum usefulness.

Concrete has assumed a high place in construction materials largely because of its ready adaptability for all work. By the improvement of construction methods, its cost may be brought low enough so that it will be still more widely used.

**Among the recent contracts awarded the Raymond Concrete Pile Co., of New York and Chicago, are the following: 1579 "Raymond" concrete piles for the foundation of the Schenley high school, Pittsburgh, Pa.; foundation for Public School No. 5, Jersey City, N. J.; stand Raymond concrete piles for the Appraisers' Stores, Milwaukee, Wis.**

# With the QUARRIES

## Connecticut Plant Crushes for New York Market

The condemnation by the Palisade Park Commission of a number of trap rock quarries operating along the Hudson river has opened an attractive field for trap rock quarries removed from the possibility of condemnation and from which crushed stone can be transported by water to the New York market. The first firm to take advantage of the opportunity thus presented is the New Haven Trap Rock Co., which has opened quarries and constructed a stone crushing plant at Totoket mountain, at North Branford, Conn., nine miles east of New Haven. The plant has just commenced activities and is already sending stone to the New York market.

**Large Supply of Stone Available.**

About 600 acres of the mountain is owned by the company and is available for quarrying. The mountain, several miles in length, is composed of sandstone covered with a trap sheet 150 feet or more in depth. The quarry has a face of 50 feet in height and a strip 5,000 feet long has been opened and equipped with steam shovels for handling rock. The drilling is done with both steam and well drills and the rock is blasted in sizes easily handled with a steam shovel. The output of the quarry is limited only by the number of steam shovels that can be operated on a quarry face of this length.

Steam drills are in the majority at the quarry. The method of drilling furnishes the quarrymen with horizontal holes, usually called snake holes, at the quarry floor about 30 feet deep and 10 feet apart. These holes are then sprung with dynamite until they are sufficiently large to hold enough dynamite to blow down the rock above. After 20 holes have been sprung they are loaded and shot simultaneously with 60 per cent dynamite. A large amount of rock is brought down ready for the steam shovels to load into cars. After this process practically no extra drilling or blasting is required.

Though operated on the same level, two distinct quarries are maintained. By this process a layer 50 feet in height is taken off the entire area; then another quarry floor is made 50 feet below and the operation continued as before. Standard gauge cars bring the rock from the quarry to the crusher plant down a two per cent grade propelled by 45-ton locomotives.

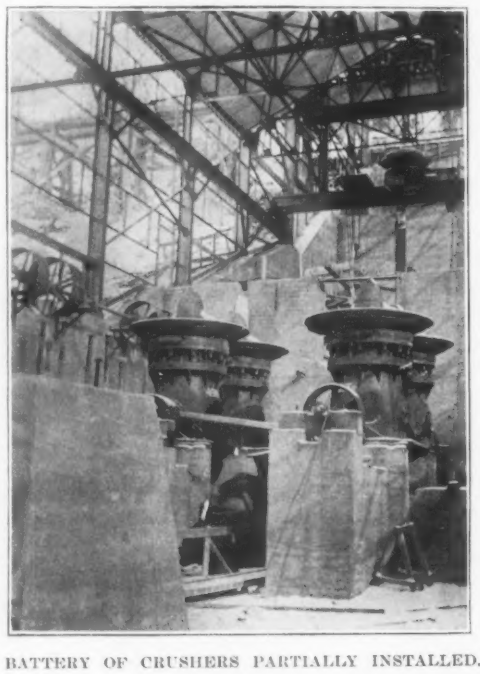
**Crushing Plant Location and Equipment.**

The crushing plant is located on the side of the mountain in the sandstone just below the sheet of trap rock. A large amount of rock had to be excavated for the plant, but as the sandstone was soft and easily removed, locating the building at this place was an economical proposition. The building which houses the battery of crushers is 40 feet wide by 200 feet long and is constructed entirely of concrete and structural steel.

In addition to a large jaw crusher with an opening of 48 by 72 inches, the plant is equipped with the following crushing and screening machinery: one No. 10 gyratory crusher, four No. 6 gyratory crushers, two disc crushers, five friction-driven revolving manganese screens, 60 inches by 16 feet, with dust jackets; two friction-driven revolving manganese screens, 48 inches by 16 feet, with dust jackets, and two pulsating screens.

**Cycle of Operations.**

The cars loaded with rock are carried into the crushing plant on steel girders and all of the stone is dumped into the jaw crusher, where it is reduced in size to 10 inches and under. It then falls by gravity into the No. 10 gyratory crusher, which reduces it to five inches and under. From this crusher, as shown in the accompanying illustration, it is carried by an inclined belt conveyor to a scalping screen which removes any stone already broken to market sizes. The tailings from this screen are carried by a belt conveyor over a battery of four No. 6 gyratory crushers, which reduce practically all the stone to market sizes. A third conveyor carries the stone from here to a pair of scalping screens placed in parallel, which remove all stone crushed to marketable sizes by the No. 6 gyratory crushers. The tailings from these screens fall into two disc crushers, from which it can pass only after being



BATTERY OF CRUSHERS PARTIALLY INSTALLED.

broken as finely as desired. The commercial stone removed by the second scalping screen passes by means of a chute to the main conveyor leading to the screen house. The stone removed by the first scalping screen is carried by another conveyor to this main conveyor, and the stone from the disc crushers is also collected on it.

**Screen House 100 Feet Long.**

The screen house consists of a wooden bin 100 feet long, 35 feet wide and 30 feet high, and is divided into compartments each of which contains a commercial size of stone. The stone is carried from the crusher house by the main inclined conveyor to two screens placed in parallel above the bins. These screens remove all the stone which will pass a one and one-quarter-inch ring and leave as tailings one and one-quarter-inch stone from the jackets and two-inch stone from the main screen. These tailings fall into the first two compartments.

Stone smaller than one and one-quarter-inch is carried by another conveyor to two other revolving screens located further along the screen house. The jackets of these screens have holes three-eighths inch in diameter for the first half of their length and five-eighths inch diameter along the second half. All stone passing through the three-eighths inch holes falls upon the pulsating screens, one located under each revolving screen. These clean the stone and separate the dust and dirt from the quarter-inch stone. The five-eighths inch holes in the jackets remove the half-inch stone, and the tailings from the screen gives one-inch stone and from the jacket three-quarter-inch stone. The seven revolving screens are manganese steel throughout. The first five are made from the same pattern, the only difference being in the size of the holes in the screen plates. Each screen is equipped with a dust jacket in which the holes are smaller than those in the main screen. This greatly increases the capacity and efficiency of screening.

In taking the stone to and from the conveyors, care has been taken to make stone fall on stone, rather than on steel chutes, in order to minimize the wear. All skirt boards are free from contact with the belts and are held in place by braces fastened to the stringers below the conveyors. It should be noted particularly that there is no return of the stone to a crusher, screen or belt through which it has once passed and that the progress of the stone is continually forward, to lessen as much as possible the power required. There are no elevators of any kind in the plant.

The plant is so designed that the entire crushing outfit—eight crushers—can be duplicated at any time within the building and without moving a single crusher from its present location. This would seem to indicate that the building as constructed is much too large, but close observation does not bear this out.

On account of the continually forward movement of the crushed stone through the crushers and screens the output is greatly increased, as no tailings are brought back to the crusher. The opening in the crushers can be so adjusted that if one crusher becomes overloaded and flooded with stone the other crushers can be closed or opened to equalize the work. This gives maximum capacity for all crushers.

Should the initial crusher be out of commission the stone can be fed direct from the quarry cars to the No. 10 crusher. Should the No. 10 be out of commission the stone can pass from the initial crusher to the four No. 6 crushers. The screens can also be operated singly or in pairs, as production required. It would require a series of accidents to put the entire plant out of commission, as any crusher can be by-passed.

**Transportation of Finished Product.**

The storage bins in the screen house have a capacity of 3,000 yards. The stone from the bins can be placed directly on railroad cars by chutes at the side of the bins or by means of a belt conveyor running in a tunnel under the bins. By this latter method the bins can be more completely emptied.

A gravity yard with capacity for 40 standard gauge railroad cars is located to the east of the screen house. From here the empty cars drop down to the screen house, are loaded and passed over track scales to a lower yard of equal capacity for loaded cars. From here trains are run over a standard gauge railroad six miles long, built by the company, to the storage bins at tidewater, or to a ground storage of unlimited capacity near it. Connections are made with the N. Y., N. H. & H. railroad and with two trolley companies for rail shipments.

The tidewater plant consists of bins of about

4,000 cubic yards capacity, belt conveyors for loading scows, a basin sufficiently large to hold a fleet of scows and a dredge channel to deep water.

**Private Transmission Line for Electric Power.**

Operations of the plant and quarry are conducted through the aid of electrical power supplied by a firm in the city of New Haven and transmitted on a private line seven miles to the plant at 6,600 volts, three phase, and 60 cycle, alternating current. A small building outside of the crushing plant houses the main switchboard with the necessary equipment for measuring the power. In addition each individual motor is supplied with an ammeter to measure the power consumed by it. The lightning arresters and transformers are of the outdoor type, located near the switchboard and only low voltage, 550 volts, is carried to the motors in the crusher and screen houses. These motors are of the slip ring type with outside dust-proof collector rings and three bearings on all motors over 100 horsepower. The motor equipment consists of one 250-horsepower, three 150-horsepower, one 100-horsepower, one 75-horsepower and one 35-horsepower motors.

The machinery has been carefully grouped in order to permit the use of larger and fewer motors and make them as nearly interchangeable as possible.

The initial jaw crusher requires about 200 horsepower to operate; but in cold weather and under unfavorable circumstances, as when starting under a load, it will sometimes require considerably more. Consequently, a 250-horsepower motor was installed here and part of this power is used for the first scalping screen and two conveyors which must run empty until stone is passed through the jaw crusher and it is well started. Owing to the nature of the ground it would have required considerable rock excavation to have placed this motor at the customary distance from the shaft of the crusher. A Lenix drive is installed here and the motor and crusher shafts are placed on only 10-foot centers. This Lenix drive is essentially a counter weighted idler which rests on the slack side of the belt and greatly increases the arc of contact on both pulleys.

All belts, jackshafts, gears and pulleys are standardized and as few different sizes used as possible in order to carry a minimum number of duplicate parts in case of breakage.

Considerable water is required around the plant and for the steam used for shovels and drilling in the quarry. This is supplied by a pump located on low marshy land about a mile from the plant. Electric power is stepped down from 6,600 volts to 2,200 volts by a small transformer at the crusher house and carried to the pump where it is further stepped down to 220 volts for operation.

Preston K. Yates, consulting engineer of New York city, was engaged to design the crushing plant and to develop the quarry. Mr. Yates had entire charge of erection, which was done by day labor selected from the organization of C. W. Blakeslee & Sons of New Haven, Conn. Much credit is due to Clarence Blakeslee, an official of The New Haven Trap Rock Co., and to Sheldon S. Yates, principal assistant engineer, for the assistance given during the course of construction.

### RECENT INCORPORATIONS.

Spring Grove Stone & Lime Co., Hanover, Pa.; capital, $10,000.

The Great Notch Stone Co., 225 Passaic avenue, Belleville, N.J.; $100,000 capital; natural and artificial stone; incorporators, Philip Jannarone, 225 Passaic avenue, Belleville, N. J.; Peter Jannarone, 225 Passaic avenue, Belleville, N. J., and Edw. D. Burns, Paterson, N. J.

The Delta Rock Manufacturing Co., Escanaba, Mich.; capital $15,000.

Webster & Springer Co., Inc., Schenectady, N. Y.; $10,000 capital; construction and quarrying business; incorporators, Harry E. Webster, John E. Springer and Mabel Stevens, Schenectady, N. Y.

## General News of the Quarries.

The Woodford Engineering Co., of West Bend, Wis., is manufacturing a system of central control intended for an extensive quarry at Corona, Cal. The equipment will weigh more than 40,000 pounds.

A new lime crushing plant has been established at North Pownall, Vt. The Windham County Agricultural Association is fathering the proposition.

The Wisconsin Granite Co., with quarries and plants in the state of Wisconsin, announce the removal of its main office to 1501-3 Lumber Exchange building, LaSalle and Madison streets, Chicago, Ill.

The Leathem & Smith Co., of Sturgeon Bay, Wis., operating one of the largest quarry systems in Northern Wisconsin, has placed its quarry at the mouth of the bay in operation. More than 3,000 pounds of dynamite were set off at the first blast. The company now has many large contracts on hand to furnish stone in various cities in central and northern Wisconsin. The concern also has a contract to deliver from 15,000 to 25,000 tons of crib stone to Edward Gillen, Jr., of Milwaukee, who has the contract for constructing the water frontage of a city park project.

Greer Limestone Co., Morgantown avenue and Kingwood Railroad, Morgantown, W. Va., proposes expending $25,000 in the construction of a limestone crushing plant.

The France Stone Co., Second National Bank building, Toledo, Ohio, will establish a large stone crushing plant at Kenton, Ohio.

It is reported that the Petoskey Crushed Stone Co., Petoskey, Mich., will reopen its plant shortly.

Carbon Limestone Co., Birmingham, Ala., has awarded the contract to the Allis-Chambers Mfg. Co. to install grinding machinery and dry kilns at its limestone pulverizing plant at Hillside, costing $40,000. The product is to be crushed for agricultural use.

Banner Rock Products Co., Alexandria, Ind., has increased its capital from $50,000 to $75,000.

McDermott Stone Co., McDermott, Ohio, proposes to increase its capital from $100,000 to $300,000.

The Carbon Limestone Co., Youngstown, Ohio, recently expended about $125,000 on its properties at Hillsville, Pa., putting in large crushers, steam shovels, etc., so as to do all the work mechanically. The product is now handled altogether without hand loading. The output now approximates 1,000,000 tons a year.

The Morris County Crushed Stone Co., Millington, N. J., recently resumed work in full force. The plant has been running with only 20 men during the winter. Their full capacity requires 125.

The Standard Crushed Stone Co., Niagara Falls, Ont., has been awarded the tender to supply that city with crushed stone from Windmill Point at $1.10 a ton, f. o. b. Niagara Falls.

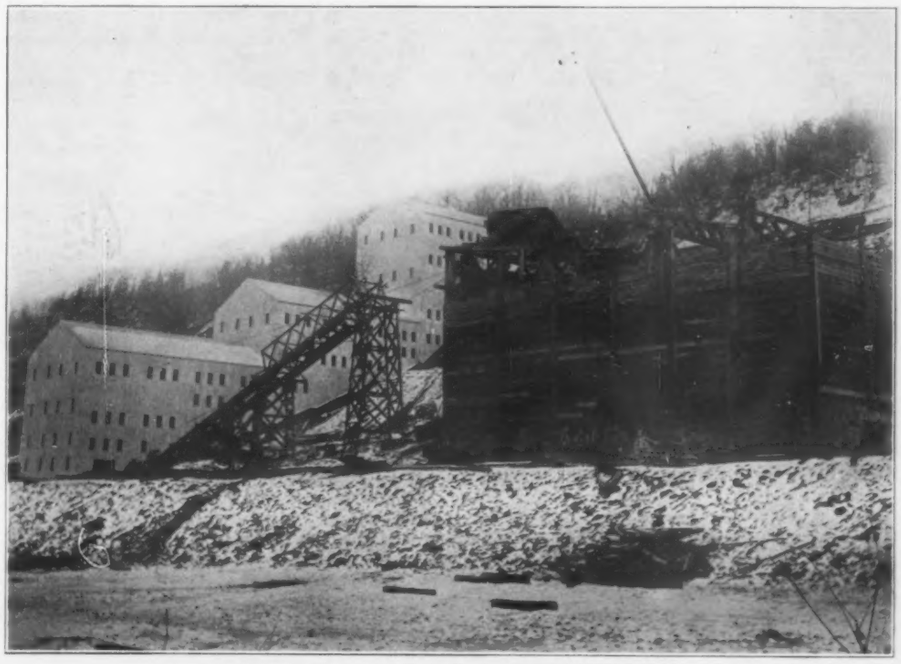
The Phillipsburg Supply & Construction Co., Phillipsburg, N. J., has been awarded the contract to furnish the crushed stone for that city for the ensuing year, they being the lowest bidders.

The T. C. Parker Quarry Co., near Dames Ferry, Ga., was sold a few days ago at public sale to a man named Paul from North Carolina, who bid $37,500. The quarry is considered one of the best in the South, and its working force has been idle since bankrupt proceedings were brought against the owner.

## Canadian Stone Contracts.

The city of Quebec has awarded contracts for the supply of sand and stone dust to J. J. Tierney. In Montreal the paving program has been announced for the season. The sum of $1,800,230 will be spent on pavements, the greater part of which, it is expected, will be asphalt, but a large sum will be spent on macadam. Maisonneuve has one deal pending for paving which amounts to $100,000. In fact, the various cities and other municipalities are following the provinces in making large road appropriations and contracts which will require a large amount of road materials and machinery.

The Canada Crushed Stone Corporation, Ltd., has been awarded the contract for all crushed stone, with the exception of trap rock, needed by the Toronto-Hamilton highway commission. An interesting phase of the situation developed because of a five-year contract last year's board of control had awarded the company, which was later made binding by an act of the Ontario legislature. Some opposition emanated from a few members of the board of control, who claimed that the preceding board had no authority to make a five-year contract. All parties admitted that the quality of the stone was excellent and the prices reasonable and just.



STONE CRUSHING PLANT AND BINS OF THE NEW HAVEN TRAP ROCK CO.

# LIME

## The Manufacture of Hydraulic Lime*

BY J. BOERO, C. E.

I was greatly honored but at the same time somewhat puzzled, when asked to prepare a paper for your annual meeting. What subject could I choose? I will explain in a few words why I was rather reluctant when I tell you in confidence that I have never seen a single lime plant in America.

On second thought, and after reading the proceedings of your last year's meeting, I decided to offer a paper on the manufacture of hydraulic lime as it is done in France.

I know, and your president has warned me, that this subject does not seem at first to be of primordial interest to the American lime manufacturers, because the hydraulic lime rock is scarce in America; but do not forget that hydraulic lime is not necessarily produced out of a single natural rock. I think that I will be able to demonstrate later that, even if you are not aware of it, you have shown lately a considerable interest in hydraulic lime. Besides, I hope a few points which I will explain, will prove to be of interest to the lime manufacturers, as they apply to the manufacture of any lime in general, be it hydraulic or not.

Hydraulic lime, which apparently is rather neglected in America, is a very popular building material in France. In fact, its use is far more developed than the use of cement, even for government work, and under the triple influence of an elite of scientists, who did not confine their efforts to laboratory works, of a number of progressive manufacturers and also of a few intelligent contractors, hydraulic lime is now a definite product, which is used with perfect safety.

### Hydraulic Lime Produced on Large Scale.

Let me mention that the production of hydraulic lime has amounted to 1,360,000 tons in 1895, nearly 2,000,000 tons in 1907 and over 2,300,000 tons in 1912. The production of artificial cement was only 565,000 tons in 1907 and the production of natural cement 600,000 tons.

It has been estimated that during the nineteenth century an economy of over a billion dollars has been realized in the French Department of Public Works alone by the judicious use of hydraulic lime.

Among the scientists, whose works contributed most to the popularity of hydraulic lime, I must quote first Mr. Vicat, who, for the first time in 1818, demonstrated clearly that the hardening of hydraulic mortars was due to the combination of silica with lime and formulated the following Vicat's rule:

First. In order that a limestone when calcined may give a hydraulic lime, it must contain, and it is sufficient that it contains, a certain quantity of clay intimately disseminated in its mass.

Second. Iron, manganese and magnesia are not elements of hydraulicity. Any one of these elements may be absent from the limestone without interfering with its hydraulic value.

Third. Alumina itself may disappear, but the lime will take a longer time in hardening. The essential element of hydraulicity is silica.

Fourth. It is always possible to manufacture a hydraulic lime by mixing clay with lime, or with limestone in definite proportions, then burning the mixture as ordinary limestone.

The principle was found when the fabrication was still in its infancy. The lumps of lime were shipped as they were coming from the kiln, and used as ordinary lump lime, with more or less success. It was only in 1850, that Mr. H. de Villeneuve invented the rational hydratation, also the siftage of hydraulic lime. The first application was made in his own plant at La Bedoule near Marseilles. Since then, the lime manufacturers have been able to deliver a homogeneous product and the hydraulic lime industry has progressed enormously.

It has been my good fortune to be general manager of the Villeneuve lime works for several years and to devise, also supervise, the entire reconstruction of the old plant in a modern way and with modern equipment.

During the last few years, the researches of such scientists as Le Chatelier, Candlot, Bonnami and others have helped to the definite adoption of hydraulic lime in all public and civil services, also in the establishment of specifications.

### Quality of Stone.

The hydraulic limestone must be of fine grain, rather compact, and containing from 14 to 18 per cent of clay evenly distributed.

It is a known fact that the chemical composition of the ledges of the same quarry varies greatly. Sometimes the proportion of clay will vary from 10 to 27 per cent. Let us say that the variation of homogeneity of the stone will not interfere with the quality of the lime. Why? Because there are no reactions between the stones of the same baking, since there is no fusion of the mass, and, letting alone other considerations, it is of little importance that a stone with 13 per cent of clay, be burned near a stone containing 18 per cent, as in each of them separately, the chemical reactions will be approximately the same.

However, on account of the economy in coal, and also in order to avoid trouble during the passage through the kiln, it is good to burn the stones separately, in which the percentage of clay will be more than three to five per cent apart. Also, in order to obtain a lime of homogeneous composition, the ledges must be carefully analyzed, and the proportions of the different stones such that the average be sensible of a constant chemical composition.

The stones extracted from the quarry are generally broken by hand, and the average size is six by nine inches and three inches thick. This flat breaking permits a uniform burning, and at the same time, prevents unburned parts which could happen in nucleus, if the piece of limestone was too thick.

Lately, the large plants have installed jaw crushers, the fines being eliminated by a grizzly and rejected or sold for road work.

### Anthracite Used as Fuel.

The fuel is generally anthracite, in small pieces of about one inch. It must be as pure as possible, without any iron pyrite, and giving a small proportion of ashes. The pyrites have the inconvenience of producing sulphate of lime, and the ashes retard the hardening, also impair the whiteness.

The coal, broken in small fragments, is mixed with the limestone in the proportion of about 110 kilograms per cubic yard. In a good kiln, the consumption of coal must not exceed 140 kilograms per ton of lime produced.

The man in charge of the kilns is the most important factor of a good and economically operated plant, as the cost of coal amounts to nearly half of the cost price. Also, the regularity of burning insures the quality of the lime.

### Upright Kilns in General Use.

The tendency is to substitute the nearly straight cylindrical kiln, slightly larger at the base than at the top, to all the fancy profiles, which formerly had been borrowed without plausible reason from the metallurgic industry.

It has been demonstrated by experience, that the practical height is from nine to ten yards between the grate and the top of the hopper, on account of the considerable quantity of air which has to pass through the kiln, in order to blow out the carbonic acid produced. This operation is of importance, as the dissociation of carbonate of calcium cannot be effected in the presence of carbonic acid. This phenomenon has been demonstrated by the experiments of Hall, the chemist. He burned chalk in a gun barrel welded on both ends. When he opened it, the chalk was not decomposed, but transformed into marble. Consequently if the kiln is too high, the passage of air will meet too great resistance, the full quantity of carbonic acid will not be carried out, and a partial recarbonation will be possible. In fact, this is the main cause of the unburned stones. It explains also why the limestone is sometimes sprinkled with water before being dumped in the kiln, the steam produced helping the draft. It explains also why a limestone fresh from the quarry, and consequently containing all the quarry moisture, will burn better than the stone extracted a long time before burning.

Another disadvantage of a too high kiln is that the burned limestone, instead of remaining in the kiln for about three or four days, would remain longer, and the moisture of the air would provoke a partial slackening, thus giving more difficulty to the passage of air.

The latest kilns I built were about 30 feet high and had a diameter of four feet at the hopper and seven feet nine inches at the base. They produce about 12 tons of lime per day, with a consumption of about 130 kilograms of coal per ton. The main object in their construction has been to insure the even descent of the stones and the fixity of the zone of high fire.

The several phases of calcination are as follows:

First. Evaporation of the quarry moisture, which varies from four to 10 per cent. This is done at a temperature of 110° C.

Second. Dehydratation of the clay disseminated in the limestone. This is done at a temperature of 200° C.

Third. Decarbonatation of the limestone, at a temperature of about 900° C. (1650 F.)

Fourth. Action at the same temperature, of the calcium oxyde on the silica and alumina of the dehydrated clay.

To economically obtain these conditions, the zone of high fire should be always maintained at a point about one-third of the height of the kiln, under the top.

In practice, this is far from being the case. In the morning, when work is resumed, the fire is nearly on top of the kiln. Then, some lime is drawn, and so on during the day, and at closing time the fire is as near as possible from the grate, in the part of the kiln which is called the cooler. During the night no lime is drawn, and little by little the fire goes up again, so that during the 24 hours practically every part of the kiln passes through a maximum and minimum of temperature, hence, a first cause for loss of heat.

A second cause is that the descent of the stones is far from being a regular one. Some stones when red hot are then in contact with cold ones; some air drafts are produced and heat again is lost.

A third cause, and the most important, is that when the fire is down low the carbonic acid produced in the combustion zone may become hot enough to partially burn the coal of the superior beds, being transformed into carbon oxyde with an expenditure of nearly 50 per cent of the calorific power of the coal.

This explains why, at about 3 o'clock in the afternoon, the workmen near the kiln complain of headache. At that time of the day the fire begins to be down low on account of the daily lime draw.

From these considerations it results that a lime kiln should be operated night and day, without interruption. I know by experience this is not easily obtainable, but it is the only means to obtain a relative fixity of the zone of full fire and, consequently, of an economical burning. Everything that may be attempted outside of that is time and money lost.

### Method of Hydration.

The lime extracted from the kilns is sprinkled with 10 per cent in weight of hot water and dumped into the extinction pits. These are long galleries about three yards deep and four yards wide. They are long enough to receive the production of one day, and there are 15 of them.

At the present stage of the fabrication, the hydraulic lime is a skeleton of silicious cement, radiating into masses of lime. The largest portion of the mass slackens immediately, but some particles of lime are enrobed in the cement which prevents the immediate hydratation.

During the hydratation lime absorbs seven to eight per cent of water. It is sprinkled with a little higher percentage on account of evaporation.

The hydraulic lime is left in the effusion pits for about 15 days. This may seem long, if one considers that after 48 hours there are no more movements in the mass nor any more production of steam. Nevertheless, if mortar is made with this lime, it will pop and crack after a few days. The same lime, after a stay of 15 days in the pits, will give excellent results. The explanation is that after 48 hours the hydratation of the lime is nearly complete, and the mass has a tendency to cool. The excess of water combines with the silicates and aluminates, which for a time lose their hydraulic properties. It is the same water, abandoned later by the silicates, which in due time hydrate the particles of lime they had enrobed and, when this is accomplished, the silicates recuperate their hydraulicity, and the lime completely hydrated will not pop any more.

### Siftage.

After about 15 days of silotage, the lime is dumped over a grizzly with bars about one inch apart. What passes goes to the screens. What is left on the bars includes, first, the unburned limestone which is sometimes sent again to the kiln, sometimes and better, rejected. Second, the overburned lime, rich in silicates, which is crushed to one inch and under, and sent to the same screen with the lime having passed through the grizzly.

This mixture is sifted through a 50-mesh cloth, and the product is called "lime flour" or light hydraulic lime.

The tailings are sent into a mill, where they are rather more decorticated than pulverized. This operation destroys the skeleton of cement and liberates the particles of lime enrobed. At the same time, the heat produced by the mill generates some steam, thus hydrating the particles of lime newly exposed.

The crushed material is sifted in a second screen, through a 60-mesh cloth. The tailings of this operation go to a second mill, set closer than the first, and the product is sifted in a third screen. The lime sifted through the second and third screen is called "heavy lime" generally eminently hydraulic.

Sometimes, the three screens are in the same enclosure and the light and heavy lime mixed, only one brand of lime being offered to the market.

The tailings of the last screen are known as "black sands" or in French, "grappiers." Formerly they were rejected and were considered as a great nuisance, now they are used to make a special cement, which has met with considerable success.

The average proportions of these three products are:

| | |
|---|---|
| Lime flour | 75 per cent |
| Heavy lime | 15 per cent |
| Black sands | 10 per cent |

A few years ago the cost price of a ton of hydraulic lime could be formulated as follows:

| | |
|---|---|
| Quarry work | $0.25 |
| Burning | .90 |
| Hydrating | .15 |
| Crushing and sifting | .25 |
| General expenses | .25 |
| Total | $1.80 |

The selling price was from $2.40 to $3.00 per ton f. o. b. factory.

The French lime manufacturers have also had their little troubles with the users of lime. I will tell you one of them out of the many: You must have understood by the brief explanation of the fabrication that the heavy lime is the one possessed of the best hydraulic qualities, on account of the higher percentage of cement material that they contain. Until lately, the Society of Architects and a number of civil services were prescribing a volumetric dosage of the mortars, and, as all duties and freights are paid by weight, they were giving an enormous premium to the fabrication of light hydraulic lime, or lime as little hydraulic as possible.

It is evident that the specifications had not been changed for more than a century; nevertheless it took the initiative of such men as Le Chatelier, Candlot, and many others, backed by the French Association of Lime Manufacturers, to obtain after a long fight the modification of weight instead of volumetric dosage. And do not forget that in France the engineering schools are strong advocates of lime, and are supposed to give to the students a proper idea of the fabrication.

This emphasizes the fact, which I think has been brought up many times in your meetings, that the more lime users become acquainted with the details of the fabrication, the better it will be for the manufacturers.

### Hydraulic Lime Widely Used in America.

I told you a few minutes ago that the knowledge of the properties of hydraulic lime is far from being without interest to you.

Let me first give you the chemical analysis of a good eminently hydraulic lime from the well-known Lafarge works at Le Teil:

| | |
|---|---|
| Silica | 21.70 |
| Alumina | 3.20 |
| Iron oxide | 0.66 |
| Lime | 60.70 |
| Magnesia | 0.85 |
| Sulfuric acid | 0.69 |
| Loss per fire | 12.20 |
| Total | 100.00 |

The hydraulic indice or proportion of silica and alumina to lime will be

$$\frac{21.70 + 3.20}{60.70} = 0.41.$$

* Read at the convention of the National Lime Manufacturers' Association in December, 1914.

In reading the papers of your last year's meeting, I have seen that a great deal of interest is shown in the effect of addition of 10 per cent of hydrated lime on change of volume and strength of Portland cement.

Let us take the analysis of a good Portland cement, like the following:

| | |
|---|---|
| Silica | 24.80 |
| Alumina | 5.20 |
| Iron oxide | 2.30 |
| Lime | 63.61 |
| Magnesia | 1.79 |
| Sulfuric acid | 0.68 |
| Loss per fire | 1.40 |
| Total | 99.78 |

The hydraulic indice of such Portland cement is

$$\frac{24.80 + 5.20}{63.61} = 0.47.$$

Suppose that we add to such Portland cement 10 per cent of hydrated lime, that we will suppose pure and having absorbed 10 per cent of water. The analysis of the mixture will become:

| | |
|---|---|
| Silica | 22.32 |
| Alumina | 4.73 |
| Iron oxide | 2.09 |
| Lime | 66.41 |
| Magnesia | 1.63 |
| Sulfuric acid | 0.62 |
| Loss by fire | 2.20 |
| Total | 100.00 |

Hydraulic indice will then be

$$\frac{22.32 + 4.73}{66.41} = \frac{27.05}{66.41} = 0.407.$$

Now, in order to make analyses No. 1 and No. 3 comparable, let us bring them back to the percentage of fixed elements, which is obtained by multiplying each number by the proportion 100/100–A, A being the loss by fire. The figures will then be as follows:

| | Analysis No. 1. | Analysis No. 3. |
|---|---|---|
| Silica | 24.71 | 22.82 |
| Alumina | 3.65 | 4.84 |
| Iron oxide | 0.76 | 2.14 |
| Lime | 69.14 | 67.90 |
| Magnesia | .94 | 1.66 |
| Sulfuric acid | .68 | 0.63 |
| Total | 99.88 | 99.99 |
| Hydraulic indice | 0.410 | 0.407 |

Let us look closely at these two analyses. Do you not think that they are more than similar?

Now let us come back to the last Vicat's rule that I mentioned above. You can readily see that, by the addition of 10 to 15 per cent of hydrated lime to Portland cement, you simply have manufactured a hydraulic lime, to which all the properties and known facts about ordinarily manufactured hydraulic lime are applicable.

I thought that by calling your attention to this point a number of experiments in the laboratory or apprehension in the field could be saved.

Evidently this mixture is not the proper economical way of manufacturing artificial hydraulic lime, but, if it is a recognized fact that the kinds of building material that you manufacture, by this addition of lime to cement, is a valuable one, it may induce some of you to devote a few efforts to locate hydraulic limestone deposits or, better, to manufacture artificial hydraulic lime with a process somewhat similar to the fabrication of Portland cement, especially where rotary kilns are used for lime, this should be an easy and maybe profitable proposition.

## Flakes from the Kilns.

The F. W. Waite Lime Co. has opened a limestone quarry between Glens Falls and Hudson Falls, N. Y. A tramway, half a mile in length, will be constructed from the quarry to the kiln. The present quarry has never been worked for limestone, and it is believed that there is sufficient stone to keep the kiln busy for the next twenty-five years.

The Mayville White Lime Works, of Mayville, Wis., has filed an amendment to its articles of incorporation increasing its capital stock from $34,000 to $50,000.

The Keller Lime Works, of East Stroudsburg, Pa., reports business as being exceedingly good and that it has been operating at full speed for some time past. Foreman C. L. Hester was forced to secure an extra force of men in order to turn out sufficient material to supply the immense quantity of orders on hand.

M. G. Grove Lime Co., Grove, Md., has been authorized to do business in New Jersey. Samuel P. Hagerman, Blackwood, N. J., is representative.

Monte Santo Lime Works, Huntsville, Ala., will double capacity and install equipment.

Preliminary steps have been taken toward turning over the property of the bankrupt New York Lime Co. to the new concern which has been organized to continue the business at Natural Bridge, N. Y. Robert J. Buck, representing the bondholders, bid in the real property of the concern for $50 and the assumption of the $75,000 indebtedness. The personal property will probably be sold at private sale to the new company for something like $3,000.

New York, May 4.—There is a drop of 10 cents in the May quotations on Eastern common lime in this market. Current prices are $1.15 instead of $1.25. There is no change in prices for finishing

### OBITUARY.

Alfred Hurst, president and founder of Alfred Hurst & Co., lime manufacturers at Hurstville, Ia., died on March 25, at the age of 68 years. Mr. Hurst, as a young man, saw the opportunities of a new state and moved with his earthly possessions to Maquoketa, Ia., and established a lime plant near that city. In a short time the town sprang up around the lime plant which took its name from the founder. The plant at Hurstville has a capacity of 15,000 barrels of wood burned lime. A battery of seven kilns is employed.

Commenting on the usefulness of Mr. Hurst to humanity, A. A. Hurst, secretary of the company, says: "His life was a benediction to many and his example an inspiration in charity, truthfulness and integrity."

### THE GREATER AGRICULTURAL DEMAND.

The increasing demand for agricultural lime products, as shown by the Lime Service Bureau's reports for the past five weeks, is general throughout the eastern section covered by the bureau's service. There is a reason for this greater demand for lime for agricultural use, and the extensive educational work being conducted by our state agricultural experiment stations and the U. S. Department of Agriculture on the subject of soil improvement with lime is largely the cause for this apparent increasing consumption. This work should be encouraged in every way possible by lime producers in order that the farming public may become more and more convinced of the great value of the plant food and fertilizer, lime. There is still a very wide field for a greater agricultural lime output when you stop to consider the vast amount of unproductive land of the Eastern and Southern territory which can be made to yield good crops with the proper soil treatment and the judicious use of lime. With a greater demand for a product coming from an increasing popularity of its use, the price of that product is bound to remain stable and the possibility of its advance becomes greater.

Clinchfield Lime Co., Fletcher, N. C., has been incorporated with a capital of $25,000. Incorporators, W. E. Poteat, of Fletcher, and A. M. Field, P. R. Moale and J. W. Grimes, of Asheville, N. C.


# A. & C. Stone & Lime Company

## 75,000 Tons MONTHLY

## Macadam Crushed Stone

For road building and concrete work

OUARRIES AT

**Ridgeville and Greencastle, Ind.**

We are not contractors

**General Office: 17 N. Penn Street**

**INDIANAPOLIS, IND.**

# SAND and GRAVEL

## General Items of Interest.

A. J. Dunnmeyer, of Lewistown, Pa., has leased property at the entrance of Ort Valley and is opening up a big sand plant there. His machinery will have a capacity of 100 tons per day.

The Central Silica Sand Works, at Rockbridge, O., which is owned chiefly by capitalists of Lancaster, O., was burned April 24. The plant employed 24 men.

The Crystal Sand Co., of Wheeling, W. Va., has taken over the holdings of the Moundsville Wall Plaster Co., on the B. & O. R. R., at Wheeling, and will operate them in the future.

Ohio sand men are much worried over the ruling of the railroads, effective May 1, which rescinds the old rulings allowing the sand men eight cents a ton for unloading sand from boats or docks and loading it into cars. The railroads claim that this is a rebate contrary to the ruling of the interstate Commerce Commission.

R. S. Jennings, of New London, Wis., has purchased a 30 horsepower steam hoist which he has installed at his gravel pit.

The Deeter Gravel Co., of Kosciusko county, Ind., has changed its name to the Wabee Gravel Co.

The Panhandle Gravel Co., Anderson, Ind., has been operating its large river scoop overtime to make up for lost time in securing gravel from the river for use in building roads.

The foundations of the new gravel pit of the Pearl City Gravel Co., near Muscatine, Iowa, have been placed according to reports recently received. The gravel pit will be near the M. N. & S. railroad track, leading to the Northern gravel pit. H. J. Jeffries, head of the Pearl City Fuel Co., is said to be at the head of the new concern.

Atlas Sand & Gravel Co., Indianapolis, Ind., has increased its stock from $15,000 to $30,000.

The Fisher Sand & Gravel Co., Beloit, Wis., began operations about April 1.

W. P. McGeorge, of the Pine Bluff Sand & Gravel Co., Pine Bluff, Ark., was painfully hurt on the head a few days ago at the company's landing at the head of Nebraska street, when he was struck by an iron bolt which fell from the sand hoist. His injuries are not serious, consisting principally of a scalp wound.

Logansport Gravel Co., Logansport, Ind., has announced an increase in the number of shares of its capital stock.

Charlottesville Sand & Gravel Corp., Charlottesville, Va., plans to install a conveyor equipment to move sand from sand bed, to secure a daily capacity of 250 tons of sand.

McDaniel Bros., Gainesville, Texas, will develop additional gravel land, which will have a capacity of 100 cars daily.

Catawba Sand & Gravel Co., Charlotte, N. C., contemplates increasing the capacity of the plant and installing new equipment.

The Wisconsin Sand & Gravel Co., operating a large gravel pit near North Lake, Wis., has installed new steam shovels and other equipment and has placed its plant in operation.

R. Breslin, president of the Breslin Sand Co., which digs from large pits in the Western section of Louisville, has just purchased a six-ton Pierce-Arrow truck, which has a capacity of five cubic yards of sand. The truck is used only for open hauls where the unloading can be easily handled. The truck handles between two and three ordinary wagon loads and can make a great many more trips in the course of a day. The company has a number of good contracts on hand just now, including the Louisville Railway Co.'s contract. Fine moulding sand for use in brass and other moulding foundries is in better demand and the company is making shipments of this sand to various points. Mr. Breslin just returned from a trip to Birmingham, Ala., where he landed a nice contract.

The Meese & Gottfried Co., through its Portland (Ore.) office, has secured the contract to furnish and install the equipment for the new sand and gravel plant of the Roseburg Sand & Gravel Co. on the Umpqua river at Roseburg, Ore. A slack line excavator, jaw crusher, screens and classifiers, all electrically operated, will be included. Three sizes of gravel, two grades of sand and three grades of crushed rock will be turned out. O. T. Larsen is manager of the company.

Rasmussen & Ebbe have succeeded the firm of Rasmussen & Olson, operating a large gravel and sand plant near Waupaca, Wis. The firm recently purchased a new 10-car capacity sand and gravel loading plant, including a one-yard drag line, excavator, screens, steam power plant and hoisting engine. The equipment was purchased from the T. L. Smith Co., of Milwaukee.

### FIND SAND AND GRAVEL BEDS.

Washington, D. C., May 4.—According to reports, a good grade of sand and gravel has been found in the upper end of Mattawoman creek, Md., by the dredging machine sent there to make tests, and digging operations have been started. During the past month several lighters loaded with the material have been brought to this city for the Columbia Granite and Dredging Co., and tugs of the company are now making daily trips between Mattawoman and this city.

Going as far down the river as Mattawoman in search of beds of sand and gravel has been made necessary by the rapid exhaustion of the beds in the vicinity of this city. It is stated that the local sand dredging companies have sand experts prospecting along the river to locate other supplies from which to draw when it becomes necessary.

Dredges are still working on the beds in the mouth of Oxon run, and at other points on the eastern side of the river opposite Alexandria, but reports say the supply there is becoming scarce. Good building sand is also being obtained from the upper end of the Eastern branch, and Lewis Smoot has had one of his dredges working on beds there.

### NEW YORK PRICES FIRM.

New York, May 4.—Current prices of screened Cow Bay sand at 45 cents are the same as prevailed last month, but the Goodwin, Gallagher Sand & Gravel Co. is reporting a five-cent drop in gravel, from 85 to 80 cents for 1¾ inches, and from 90 to 85 cents for ¾-inch size. Subway gravel is being quoted by this company at 95 cents, as of May 1, instead of a dollar a month ago. There are some companies shading even this low quotation, but the big company is holding its price steady at the quoted figure. Demand is light at this writing, but the letting of important municipal and road construction work is expected to change the present weak market into a strong one in the course of a fortnight.

### NEW INCORPORATIONS.

The Louisiana Gravel Co., Inc., Jennings, La.; capital stock, $50,000; George Hathaway, president; J. P. Black, vice-president; R. E. Erwin, secretary; H. L. Davis, treasurer; M. H. Adams, T. C. Mahaffey and J A. Vandervoort.

Kavanaugh Sand Co., Memphis, Tenn.; capital, $40,000; incorporators, T. T. Kavanaugh, J. W. Harris, J. W. Harris, Jr., Caruthers Ewing, R. S. Keebler and Earl King.

West Fork Stone & Sand Co., Clarksburg, W. Va.; capital, $7,000; Wm. V. Kish, W. Arthur Stow, Wesley R. Dawson, Howard P. Protheroe, Webster Worley, Jesse L. Nicholson and E. D. Wyckoff.

Illinois Valley Silica Co., Ottawa, Ill.; capital, $100,000; mine, buy and deal in silica sand; incorporators, W. D. Moore, P. I. Thornton, W. A. Murphy.

Capital City Sand Co., Des Moines, Ia.; capital, $10,000; incorporators, A. J. Harkins, C. W. Ray, H. H. Harkins and Robert McCollum, all of Des Moines.

The Wisconsin Sand & Gravel Co., Milwaukee, Wis.; capital, $25,000; incorporators, Arthur H. Berry, Hazel M. Fox and J. M. Chicquennoi.

The Marysville Sand Co., Marysville, Cal.; capital stock, $4,800; O. L. Meek, J. W. Walker and T. F. Giblin.

### CHANGE NEW YORK BRANCH OFFICE.

The New York branch office of the Jeffrey Mfg. Co., of Columbus, Ohio, has been removed from 77 Warren street to 50 Dey street, adjoining the Hudson Terminal. George H. Mueller, assistant sales manager of the company, is the manager in charge of this office, and together with his staff of assistants has invited friends of the company to inspect the new headquarters, where he claims to carry the largest combined stock of its kind in New York City. The list of supplies in the New York office will consist of power transmission machinery, including shafting, hangers, pulleys, collars, couplings, clutches, bearings, etc.; elevating and conveying appliances, including chains, chain attachments, sprocket wheels, malleable and steel elevator buckets, elevator boots, screw conveyers, etc. A large engineering and sales force is maintained with ample facilities for handling promptly inquiries and orders pertaining to power transmission, elevating, conveying, pulverizing and coal crushing machinery, as well as electric mine, industrial and storage battery locomotives, mine ventilating fans and coal mining machinery.

The Kansas City Sand Co., Kansas City, Mo., has secured the contracts to furnish sand for the following proposed buildings: Lechtman Printing Co., eight stories; Kresge ten-cent store, Wesley hospital, Campbell bakery, S. W. Boulevard bank and the Security building, 12 stories high, which is to take the place of the old Junction building, one of Kansas City's oldest landmarks. These are reinforced concrete structures. The company recently pumped up a buffalo skull, one of the horns of which is in perfect condition, at is operations in the Kaw river. Other curios which the concern has recovered by means of its 12-inch pipe which has been nosing its way deep under the shifting sands for the past two years include war clubs, arrow heads and gun stocks.

# GYPSUM PRODUCTS

## Michigan's Gypsum Production.

The annual production of gypsum in Michigan from 1868 to 1890, inclusive, never reached 75,000 tons, according to a book on the mineral resources of the state, recently compiled under the direction of R. C. Allen, director of the Michigan Geological and Biological Survey. During the next three years there was a large increase, a total of nearly 140,000 tons being mined in 1892. The financial depression in the United States in 1892-3 caused a large decrease and only about 66,500 tons were mined in 1895. By 1899 the gypsum industry had recovered from the effects of the depression and nearly 145,000 tons were produced. Since the invention of gypsum wall plasters and other gypsum products, the industry has made a rapid growth and nearly 424,000 tons were mined in 1913.

From 1868 to 1887, more than half of the gypsum produced was ground and sold as land plaster. Since 1887, the grinding of land plaster has become of less and less importance, only 9,600 tons being ground in 1913. More than 85 per cent of the gypsum mined in 1913 was calcined and sold as plaster of Paris, stucco, or used in the manufacture of wall plaster, plaster board, fireproofing, various cements and calcimines. The mining or quarrying of gypsum has become relatively unimportant in comparison with the business of manufacturing gypsum products.

In 1913, seven mines and quarries and eight mills were operated in the state. Six mines or quarries and seven mills are located near Grand Rapids and Grandville, Kent county. One quarry and mill is located at Alabaster in southeastern Iosco county.

Three gypsum beds are worked in Kent county. The two upper beds, respectively six and 12 feet in thickness, are near the surface. The first is quarried and the second is both quarried and mined. The third bed, about 60 feet below the second, is 22 feet thick and is divided near the center by a shale parting a foot or less in thickness. At Alabaster, the gypsum bed is from 18 to 23 feet thick and is quarried on a very extensive scale. In Arenac county, another gypsum bed 50 to 100 feet above the Alabaster bed, has been located near Turner and Twining and the deserted village of Harmon City on Lake Huron. This bed, called the Turner, appears to be from six to 22 feet in thickness.

According to the records of test holes drilled north of Alabaster, there are a number of gypsum beds from five to 25 feet in thickness below the Alabaster bed. Coal drillers have reported the discovery of thick beds of pure gypsum in several places in the Coal Measures of Saginaw valley. While drilling test wells for the city of Ionia, E. E. Strope and A. G. Lang, of Mason, reported the discovery of a bed of pure gypsum from four to 30 feet in thickness. The gypsum was struck above the depth of 105 feet which would indicate that the bed is in the Coal Measures. Further investigation must be made before a definite assertion is warranted. The sample of gypsum submitted to the Geological Survey by Mr. Strope was of the selenite variety.

PRODUCTION OF GYPSUM IN MICHIGAN, 1868-1913.

| Year. | Ground into land plaster. Tons. | Gypsum calcined into plaster. Tons. | Sold crude. Tons. | Total production. Tons. | Total value. |
|---|---|---|---|---|---|
| Before 1868 | 132,043 | 14,285 | ..... | 146,328 | $671,022 |
| 1868 | 28,827 | 6,244 | ..... | 35,081 | 165,286 |
| 1869 | 29,996 | 7,155 | ..... | 37,151 | 178,524 |
| 1870 | 31,637 | 8,246 | ..... | 39,883 | 191,718 |
| 1871 | 41,193 | 8,004 | ..... | 49,520 | 234,054 |
| 1872 | 43,526 | 10,873 | ..... | 54,208 | 259,524 |
| 1873 | 44,972 | 14,724 | ..... | 59,096 | 297,678 |
| 1874 | 39,126 | 14,723 | ..... | 53,849 | 274,284 |
| 1875 | 27,019 | 10,914 | ..... | 37,933 | 190,366 |
| 1876 | 39,131 | 11,498 | ..... | 50,629 | 248,504 |
| 1877 | 40,000 | 9,819 | ..... | 49,819 | 238,580 |
| 1878 | 40,000 | 8,634 | ..... | 48,634 | 229,070 |
| 1879 | 43,658 | 9,070 | ..... | 52,728 | 247,192 |
| 1880 | 49,570 | 16,929 | ..... | 66,499 | 349,710 |
| 1881 | 33,178 | 20,145 | ..... | 53,323 | 293,872 |
| 1882 | 27,821 | 34,136 | ..... | 61,957 | 344,274 |
| 1883 | 40,062 | 28,410 | ..... | 68,472 | 377,567 |
| 1884 | 27,888 | 27,959 | ..... | 55,847 | 335,382 |
| 1885 | 28,184 | 25,301 | ..... | 53,485 | 286,802 |
| 1886 | 39,273 | 27,376 | ..... | 66,649 | 368,094 |
| 1887 | 28,794 | 30,376 | ..... | 59,170 | 329,392 |
| 1888 | 22,177 | 35,125 | ..... | 57,302 | 347,531 |
| 1889 | 19,823 | 36,800 | ..... | 56,623 | 353,849 |
| 1890 | 12,714 | 47,163 | 15,000 | 74,877 | 192,099 |
| 1891 | 15,100 | 53,600 | 11,000 | 97,700 | 223,725 |
| 1892 | 14,456 | 77,599 | 47,500 | 139,557 | 306,527 |
| 1893 | 16,263 | 77,327 | 31,000 | 124,590 | 303,921 |
| 1894 | 11,982 | 47,976 | 20,000 | 79,958 | 189,620 |
| 1895 | 9,000 | 51,028 | 6,488 | 66,519 | 174,007 |
| 1896 | 6,582 | 60,852 | 700 | 67,634 | 146,424 |
| 1897 | 7,193 | 71,580 | 16,001 | 94,874 | 193,576 |
| 1898 | 12,345 | 77,853 | 1,994 | 93,191 | 204,310 |
| 1899 | 17,198 | 88,315 | 39,286 | 144,779 | 283,537 |
| 1900 | 10,254 | 86,973 | 32,328 | 129,654 | 285,119 |
| 1901 | 9,806 | 129,256 | 46,086 | 185,150 | 367,243 |
| 1902 | 13,023 | 156,220 | 68,855 | 240,227 | 468,021 |
| 1903 | 18,409 | 196,119 | 52,585 | 269,063 | 700,912 |
| 1904 | 18,294 | 185,423 | 54,660 | 258,385 | 641,157 |
| 1905 | 30,285 | 205,313 | 39,594 | 247,982 | 644,454 |
| 1906 | 30,230 | 208,715 | 27,517 | 341,716 | 753,878 |
| 1907 | 15,500 | 197,686 | 36,543 | 317,261 | 881,351 |
| 1908 | 11,414 | 192,462 | 46,234 | 327,810 | 801,926 |
| 1909 | 11,990 | 344,171 | 45,731 | 394,907 | 1,213,547 |
| 1910 | 7,007 | 260,925 | 64,506 | 357,174 | 887,199 |
| 1911 | 15,543 | 208,299 | 79,050 | 347,296 | 921,547 |
| 1912 | 10,103 | 243,650 | 63,819 | 384,297 | 921,547 |
| 1913 | 9,604 | 278,368 | 60,706 | 423,896 | 721,325 |
| Totals | 1,223,155 | 3,935,987 | 867,082 | 6,801,570 | $17,538,470 |

PRODUCTION OF GYPSUM IN MICHIGAN 1911-1913.

| Year. | Crude gypsum mined. | Gypsum sold crude. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | To Portland Cement Mills. | | As land plaster. | | For other purposes. | | Total sold crude. | |
| | Quantity. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Tons. | Tons. | | Tons. | | Tons. | | Tons. | |
| 1911 | 347,296 | 63,489 | $69,497 | 15,548 | $15,706 | 13 | $52 | 79,050 | $85,255 |
| 1912 | 384,297 | 53,711 | 52,420 | 10,103 | 9,375 | 5 | 50 | 63,819 | 61,845 |
| 1913 | 423,896 | a | a | 9,604 | 10,222 | 10,320 | 9,011 | 60,706 | 55,969 |

| Year. | Gypsum sold calcined. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | As mixed with wall plaster. | | As plaster of Paris, etc. | | As stucco. | | As dental plaster. | | To plate glass works. | |
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Tons. | | Tons. | | Tons. | | Tons. | | Tons. | |
| 1911 | 146,920 | $381,362 | 47,989 | $88,158 | ..... | ..... | 20 | $110 | 11,370 | $19,031 |
| 1912 | 146,099 | 368,676 | 937 | 3,229 | 82,010 | $168,734 | 3 | 12 | 6,214 | 8,078 |
| 1913 | 166,711 | 437,720 | a | a | 95,402 | 202,675 | a | a | a | a |

(a) Included in total.

| Year. | Gypsum sold calcined. | | | | Total value. | Kettles in mill. | | Daily capacity of mill. | Shifts run by mills during year. | | No. mines and quarries. | No. mills. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For other purposes. | | Total sold calcined. | | | | | | | | | |
| | Quantity. | Value. | Quantity. | Value. | | No. | Size. | 24 hrs. | Total No. | Hrs. in shift. | | |
| | Tons. | | Tons. | | | | | Tons. | | | | |
| 1911 | ..... | ..... | 206,299 | $488,671 | $573,926 | 29 | 8 x 10 | 2,200+ | ..... | ..... | 8 | 8 |
| 1912 | 8,393 | $10,973 | 243,656 | 559,702 | 621,547 | 28 | 8 x 10 | 2,140 | 1,850 | 11 | 6 | 8 |
| 1913 | 9,897 | 15,850 | 278,368 | 665,356 | 721,325 | 28 | 8 x 10 | 1,785 | 1,368 | 11 | 7 | 8 |

## MAY BUILD NEW GYPSUM MILL.

Centerville, Ia., May 5.—The movement to raise sufficient additional stock to build a gypsum mill and manufacture the product here has been revived. Centerville has a magnificent deposit of gypsum. A 530-foot shaft has been sunk, and a Chicago concern had contracted to take the raw material at the rate of not less than 100 tons per day. But the Chicago folks got into financial difficulties, and the Centerville Gypsum Co. is holding the bag, in reality the hole in the ground. Now they have evolved a better plan. They propose to build a mill and manufacture the product at home. The idea is that if it will pay some other people to haul the raw material to Chicago and work it up there, a better profit ought to be possible at the mouth of the mine. The capital needed is not so very great and there ought to be no difficulty in raising it right here at home in Centerville.

## U. S. G. TO PAY DIVIDENDS.

Directors of the United States Gypsum Co. will meet on May 12 to consider the matter of paying about 43½ per cent dividends in arrears on the $4,417,000 seven per cent cumulative preferred stock issue. It is understood the directors will recommend an issue of common stock with which to make the payment. It is then proposed to place the preferred shares on a seven per cent basis.

Both the preferred and common issues have enjoyed good advances. The present plan has been under consideration for some time.

## OKLAHOMA'S GYPSUM SUPPLY.

Gypsum is widely distributed in the Western part of Oklahoma, and it has been estimated that about 125,000,000 tons of this material are available. It is usually found in the form of massive, white, rock gypsum, although it frequently occurs as the earth gypsum or gypsite. Ninety per cent of the wall plaster used in Oklahoma, or surrounding states, is made from gypsum. There are a dozen or more gypsum mills in Oklahoma where this material is manufactured, and the value of the product is more than $300,000 a year.

## SELL RED BUTTES CONCERN.

Laramie, Wyo., May 4.—The Red Buttes plaster mill, owned by Petrie Brothers and Attorney H. Donzelman, of Cheyenne, was sold a few weeks ago to the Sahard Cement and Plaster Co., of Denver. This mill has been closed for several months, but will be started soon. A. J. Durand, a former resident of Laramie, who has had many years of experience in this business, will be the new manager at the Red Buttes mill.

# CLAY PRODUCTS

## The Schaffer Continuous Clay Products Dryer.

Among the "Seeco" labor-saving and profit-producing systems manufactured by the Schaffer Engineering & Equipment Co., Tiffin, Ohio, is a continuous clay products dryer, which, it is claimed, presents many departures from time-worn practice. The Schaffer Continuous Clay Products Dryer takes the ware from the machine, dries it and delivers it into the kilns automatically. The dryer consists of a conveying system, carrying pallets through a heated tunnel. The tunnel or dryer is on similar lines to the present drying tunnels, but of greater length and arranged so that the drying conditions are under full control and can be regulated to handle the most tender ware.

Perforated pallets are loaded with 80 to 90 bricks while passing the off-bearing belt of the brick machine. After the pallets are loaded they travel through a long tunnel which is supplied with heat. At the end of this tunnel they are transferred by means of gravity rolls to a second conveyor which carries the pallets, loaded with ware, out alongside of row of kilns and which is provided with automatic switches that deliver the pallets into the kilns over gravity rolls.

After the ware has been removed the empty pallets are placed on gravity rolls, which deliver them to the returning cables and return them to the delivery end of dryer, where they are transferred by means of gravity rolls to a light cable conveyor, which conveys them back to the machine.

The conveyor that carries the ware through the tunnel travels at a very low rate of speed, regulated to suit the ware to be dried. This conveyor is driven by means of a motor or engine, worm gear, sprockets and chain. The second conveyor travels at a higher rate of speed, and is driven by the same means as the former conveyor. The conveyor at the receiving end is provided with tension carriages and weights, which keeps the proper tension on the cables and also takes care of the expansion and contraction. The cables are supported by idlers placed at short intervals so as to prevent any perceptible amount of deflection.

The tunnel ranges in length from 250 to 400 feet, depending on the capacity desired and condition, and is built to fit rather snugly around the loaded pallets and conveyor. It is provided with a furnace; also means of utilizing waste heat from the cooling kilns. The heat from direct firing is radiated through the floor of the tunnel.

The moisture expelled from the ware is taken into ducts built in the side walls. These ducts are partitioned off, both horizontally and vertically, and provided with dampers so as to regulate the amount of moisture taken out at different points along the tunnel. The moisture enters the ducts at the top and takes a downward course, by which action the moist air is much more readily separated from the dry air. Access doors are also provided at intervals along one side of the tunnel to admit of inspection of conveyor and ware.

The ware as it enters the tunnel is first subjected to warm air, slightly above atmospheric temperature. It then comes in contact with air of a higher degree of heat and a higher percentage of moisture, which warms up the ware evenly throughout without removing any moisture. As it progresses it gradually comes in contact with air of a higher degree of heat and a lower percentage of moisture, until it reaches a point at which it is subjected to a hot dry air, approximately 300 to 400 degrees, and the remaining moisture is removed very rapidly.

The ware then passes into what is termed a cooling tunnel, and the radiating heat from the ware is drawn back into the drying tunnel.

---

A bill has recently been passed in the house of representatives of Pennsylvania which permits companies organized in other states to manufacture clay products to hold realty in the state.

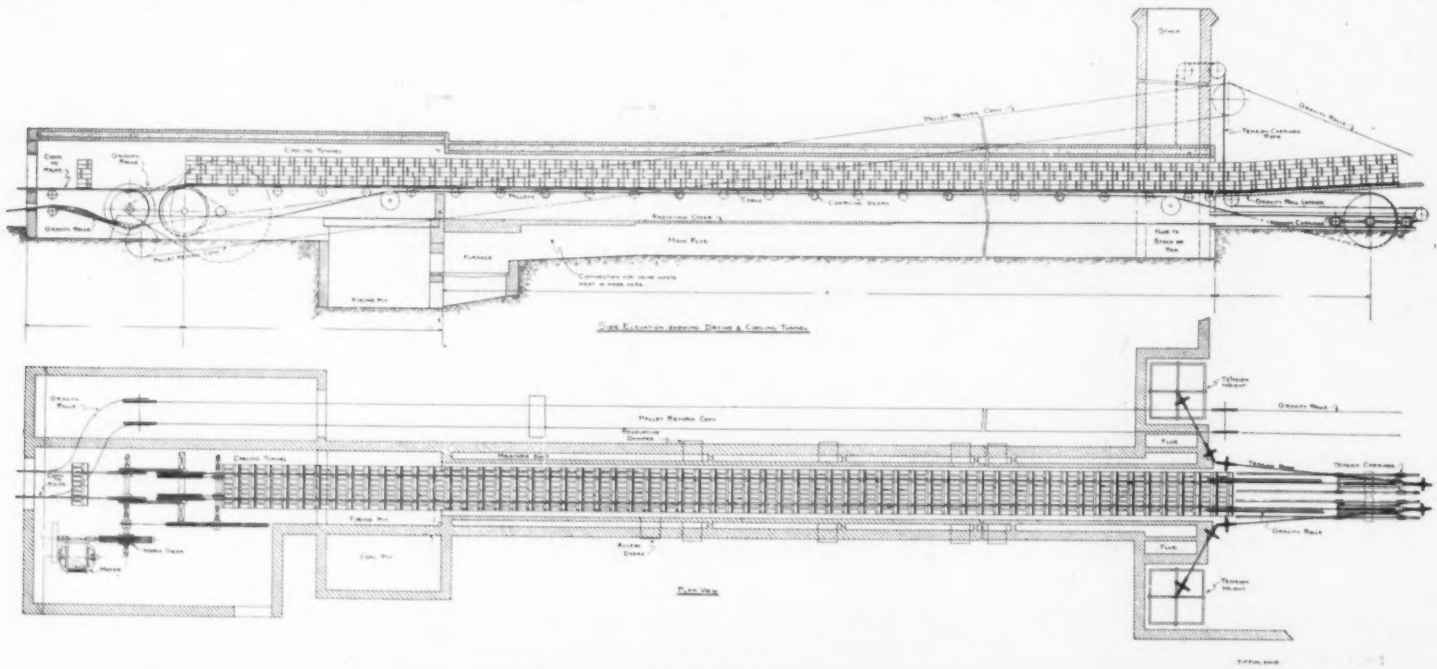
### COMPLETE TREATISE ON PAVING BRICK.

One of the most complete stories ever told about the manufacture of paving brick is to be found in an interestingly written and cleverly designed and illustrated booklet published by the Metropolitan Paving Brick Co., of Canton, Ohio, entitled "Shale Bed to Road Bed." The story, which is written in as few words as possible and which is fully illustrated, takes the reader from the shale beds of the company through the process of excavating, crushing and screening to the pug mill or mixer of the plant at Canton, from which the journey is continued by way of the brick machine, showing in detail the cutting and measuring as well as the shaping of brick to the huge dryers used by this company.

An interesting illustration shows the interior of one of the 16 large kilns in which are placed 100,000 paving brick in preparation for the burning. The publication tells how 28 courses of brick are placed in the kiln, with sand on the top of each course to prevent the brick from sticking together. Here they are burned for seven and one-half days, the last three days of which a constant temperature of 2,000 degrees is maintained to finish the brick and to take out all the shrinkage.

Before taking the observer to the immense storage yard of the company where there are always at least 5,000,000 brick in stock, a review of the manufacture and burning of brick shows that there are always more than 2,000,000 brick in some stage of manufacture in this particular plant of the Metropolitan Paving Brick Co.

Large birds-eye views of the various plants of this company are shown, together with illustrations of a number of thoroughfares on which "Metropolitan" paving brick have been used, in some instances for a quarter of a century. Among the illustrations are two street scenes in Mexico, where this brick has been used. The periodical was published for friends and patrons of the company.



THE SCHAFFER CONTINUOUS CLAY PRODUCTS DRYER.

# Real Co-operation WITH THE Dealer

WE ARE advertising to builders, owners, and contractors with advertisements similar to the one below, and which are assisting the dealers materially in the selling of CAN-O-CO.

Agencies for CAN-O-CO. are rapidly being taken over by dealers throughout the country, and an opportunity to add a real profit and sales producer to your building material line may not be open in a few months.

DAMP WALL

CAN-O-CO No. 777

CAN-O-CO DAMP PROOFING NO. 777

The No. 777 grade is a permanent waterproofing, preventing the absorption of moisture. It gives the wall an elastic, black, glossy surface Ideal for basements, cisterns, tanks, vats, silos and similar structures.

## CAN-O-CO

### Dampproofing Compound

This is a material manufactured for a specific purpose and given long time tests in actual service before being placed on the market. We claim that this material will do certain things. Every statement made by us in behalf of this material is founded on definite, proven facts.

***Put Your Waterproofing Problems Up to Us***

Our engineers have had years of experience in solving waterproofing problems. No matter how difficult your present problem is, it will cost you nothing to put it up to us and get our recommendation. We don't claim that we can solve every problem. We won't attempt to sell you any waterproofing material unless we are sure that it will do the work. Write us frankly and in detail, and our reply will be just as frank and just as definite.

**Canfield Oil Co., Cleveland, O.**

CEMENT PLASTER

CAN-O-CO DAMP PROOFING NO. 666

LEAKY WALL

CAN-O-CO No. 666

CAN-O-CO No. 666 is more "tacky," and in addition to sealing the pores and forming a waterproof film, it acts as a perfect bond between the wall and any plaster or cement coat that is to be applied This also is a bonding coat, eliminating cost of lath and furring. It is generally used when dealing with cases of ground water under pressure.

**DEALER CO-OPERATION**

A special engineering department, follow up literature, and a good margin of profit are part of the assistance that the Canfield Oil Co. offer to you.

WRITE TODAY FOR COMPLETE INFORMATION, AND WE WILL BE PLEASED TO ASSIST YOU IN PRODUCING GREATER SALES

**CANFIELD OIL CO., CLEVELAND, O.**

# CLASSIFIED BUSINESS DIRECTORY

### BAGS AND BAG TYERS.
Faeberhill Mfg. Co. (bag tyers).
Jalte Company, The.
Urschel Bates Valve Bag Co.

### BELTING.
H. W. Caldwell & Co.
Chain Belt Co.
Dull & Co., R. W.
Imperial Belting Co.
Link Belt Co.
Revere Rubber Co.
Stephens-Adamson Mfg. Co.
Webster Mfg. Company.
Weller Mfg. Co.

### BRICK.
Belden Brick Co.
Metropolitan Paving Brick Co.

### BRICK CLAMPS.
The P. D. Crane Co.

### BRICK PAVING.
Harris Brick Co.
Metropolitan Paving Brick Co.
Thornton Fire Brick Co.

### BUCKETS, DUMPING AND GRAB.
Atlas Car & Mfg. Co.
H. W. Caldwell & Co.
Haiss Mfg. Co., Inc., Geo.
Hendrick Mfg. Co.
Link Belt Co.
McMyler-Interstate Co.
Willis Shaw Mchy. Co.

### CABLES.
American Steel & Wire Co.
Dull & Co., R. W.
Sauerman Bros.

### CARS, INDUSTRIAL.
Atlas Car & Mfg. Co.
Austin Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Kilbourne & Jacobs Mfg. Co.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

### CASTINGS.
Allis-Chalmers Mfg. Co.
Traylor Eng. & Mfg. Co.

### CEMENT, CAEN STONE.
Cleveland Bldrs.' Supply Co.

### CEMENT, HYDRAULIC.
Carolina Portland Cement Co.

### CEMENT, PORTLAND.
Atlas Portland Cement Co.
Carolina Portland Cement Co.
Chicago Portland Cement Co.
Clinchfield Portland Cement Corp.
Copiay Cement Mfg. Co.
Huron-Wyandotte Port. Cement Co.
Kansas City Portland Cement Co.
Lehigh Portland Cement Co.
Marquette Cement Mfg. Co.
Northwestern States Portland Cement Co.
Ohio & Western Lime Co.
Phoenix Portland Cement Co.
Sandusky Portland Cement Co.
St. Louis Portland Cement Works.
Union Sand & Material Co.
Vulcanite Portland Cement Co.
Whitehall Portland Cement Mfg. Co.
Wolverine Portland Cement Co.
Woodville Lime & Cement Co., The.

### CHAINS.
Chain Belt Co.
Columbus Chain Co., The.
Jeffrey Mfg. Co.
Link Belt Co.

### CLAYWORKING MCHY.
American Clay Mchy. Co.
Bartlett, C. O., & Snow Co.

### COLORINGS DRY AND MORTAR.
Samuel Cabot.
Chattanooga Paint Co.
Clinton Metallic Paint Co.
Macneal, James B., & Co.
Ricketson Mineral Paint Works.
Williams, C. K., & Co.
Woodville Lime & Cement Co.

### COMPRESSORS.
Allis-Chalmers Mfg. Co.
Clayton Air Compressor Co.

### CONCRETE MIXERS.
Chain Belt Co.
Cement Tile Mach. Co.
Jaeger Mach. Co.
Miscampbell, H.
Power & Mining Mach. Co.

### CONCRETE REINFORCEMENT.
American Steel & Wire Co.

### CONSULTING GEOLOGISTS.
Grimsley, G. P., Ph. D.
Hunt, Robt. W., & Co.

### CORNER BEADS.
Bostwick Steel Lath Co., The.
Canton Metal Ceiling Co., The.
North Western Expanded Metal Co.
Sykes Metal Lath & Roofing Co.

### CRANES—LOCOMOTIVE AND GANTRY.
Cleveland Ry. Supply Co.
Link Belt Co.
McMyler-Interstate Co.

### CONVEYORS AND ELEVATORS.
Allis-Chalmers Manufacturing Co.
Austin Mfg. Co.
Bartlett, C. O., & Snow Co.
Caldwell, H. W., & Sons Co.
Chain Belt Co.
Dull, Raymond W., & Co.
Ehrsam, J. B., & Sons Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Manufacturing Co.
Link Belt Co.
McMyler-Interstate Co.
McLanahan Stone Machine Co.
Manierre Eng. & Mach. Co.
Power & Mining Mach. Co.
Stephens-Adamson Mfg. Co.
Toepfer, W., & Sons.
Webster Mfg. Company.
Weller Mfg. Co.

### CRUSHED STONE.
A. & C. Stone & Lime Co.

### CRUSHERS AND PULVERIZERS.
Allis-Chalmers Manufacturing Co.
American Pulverizer Co.
Austin Mfg. Co.
Bacon, Earl C.
Bartlett, C. O., & Snow Co.
Bonnot Co., The.
Bradley Pulverizer Co.
Butterworth & Lowe.
Chalmers & Williams.
Ehrsam, J. B., & Sons Mfg. Co.
Jeffrey Manufacturing Co.
K.-B. Pulverizer Co.
Kent Mill Co.
Lewistown Foundry & Machine Co.
McLanahan Stone Machine Co.
Pennsylvania Crusher Co.
Power & Mining Mach. Co.
Raymond Impact Pulverizer Co.
Sturtevant Mill Co.
Traylor Eng. & Mfg. Co.
Webb City & Carterville F. & M. Wks.
Williams Pat. Crusher & Pulverizer Co.

### DRAIN TILE.
American Clay Co.
Vigo-American Clay Co.

### DRILLS.
Loomis Machine Co.

### DRYERS.
American Process Co.
Bartlett, C. O., & Snow Co.
Link Belt Co.
Ruggles-Coles Eng. Co.

### ENGINEERS.
American Process Co.
Bacon, Earl C.
Buckbee Co., J. C.
Duff Patents Co., Inc.
Dull, Raymond W., & Co.
Fuller Engineering Co.
Grimsley, G. P.
Hunt, Robt. W., & Co.
Improved Equipment Co.
Meade, R. K.
Sauerman Bros.
Schaffer Eng. & Equip. Co.
Smidth & Co., F. L.
Stephens-Adamson Mfg. Co.
Traylor Eng. & Mfg. Co.

### ENGINES.
Allis-Chalmers Mfg. Co.
Power & Mining Mach. Co.

### EXCAVATORS.
Buckbee Co., J. C.
Raymond W. Dull Co.
Haiss Mfg. Co., Inc., Geo.
Indianapolis Cable Excavator Co.
McMyler-Interstate Co.
Sauerman Bros.
Weller Mfg. Co.

### FIRE BRICK.
Carolina Portland Cement Co.
Improved Equipment Co.
Thornton Fire Brick Co.
Union Mining Co.

### FLOOR HARDENER.
Ceresit Waterproofing Co.

### FURNACES FOR SPECIAL PURPOSES.
Improved Equipment Co.

### GAS PRODUCERS.
Duff Patents Co.
Improved Equipment Co.

### GATES.
Haiss Mfg. Co., Inc., Geo.

### GEARS.
Caldwell, H. W., & Son Co.
Chain Belt Co.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

### GLASS SAND MACHINERY.
Lewiston Fdy. & Mach. Co.

### GYPSUM BLOCK.
American Cement Plaster Co.
U. S. Gypsum Co.
Plymouth Gypsum Co.

### GYPSUM—PLASTER.
American Cement Plaster Co.
American Keene Cement Co.
Best Bros. Keene's Cement Co.
Cardiff Gypsum Co.
Carolina Portland Cement Co.
National Mortar & Supply Co.
Ohio & Western Lime Co.
Plymouth Gypsum Co.
U. S. Gypsum Co.
Wheeling Wall Plaster Co.

### HAIR.
Ohio & Western Lime Co.

### HOISTS, ELECTRIC AND STEAM.
Allis-Chalmers Mfg. Co.
Buckbee Co., J. C.
Link Belt Co.
Haiss Mfg. Co., Inc., Geo.

### HOLLOW CLAY TILE.
American Clay Co.
Metropolitan Paving Brick Co.
Vigo-American Clay Co.

### HYDRATING MCHY.
Atlas Car & Mfg. Co.
Kritzer Co., The.
Miscampbell, H.

### LIME.
Carolina P. C. Co.
Hannibal Lime Co.
Kelley Island Lime & Trans. Co.
Mitchell Lime Co.
National Lime & Stone Co.
National Mortar & Supply Co.
Ohio & Western Lime Co., The.
Owens & Son, John D.
Scioto Lime & Stone Co.
Woodville Lime & Cement Co.

### LIME, HYDRATED.
Hannibal Lime Co.
Kelley Island Lime & Transport Co.
Mitchell Lime Co.
National Lime & Stone Co.
National Mortar & Supply Co.
Ohio & Western Lime Co., The.
Owens & Son, John D.
Scioto Lime & Stone Co.
Woodville Lime & Cement Co., The.

### LIME KILNS.
Atlas Car & Mfg. Co.
Improved Equipment Co.

### LOADERS AND UNLOADERS.
Ambursen Company.
Chain Belt Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link Belt Co.
Manierre Eng. & Mach. Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

### LOCOMOTIVES.
Davenport Locomotive Wks.
Willis Shaw Mchy. Co.

### MANGANESE STEEL.
Allis-Chalmers Mfg. Co.
Link Belt Co.
Taylor-Wharton Iron & Steel Co.

### METAL LATH.
Bostwick Steel Lath Co.
Carolina Portland Cement Co.
North Western Expanded Metal Co.
Sykes Metal Lath & Roofing Co.
Trussed Concrete Steel Co.

### MOTOR TRUCKS.
Kissel Motor Car Co.
Pierce-Arrow Motor Car Co.

### PAINT AND COATINGS.
Cabot, Samuel.
Canfield Oil Co.
Ceresit Waterproofing Co.
Chattanooga Paint Co.
Gordon-Hitti Co.
Macneal, James B., & Co.
Ricketson Mineral Paint Co.
Williams, C. K., & Co.

### PEBBLES.
Canada Pebble Co.

### PERFORATED METALS.
Allis-Chalmers Mfg. Co.
Johnson & Chapman.
Hendrick Mfg. Co.
Toepfer, W., & Son.

### PLASTER.
See Gypsum.

### PLASTER BOARD.
American Cement Plaster Co.
Plymouth Gypsum Co.
U. S. Gypsum Co.

### PLASTER BOND.
Ceresit Waterproofing Co.

### PLASTER MCHY.
Butterworth & Lowe.
Dunning, W. D.
Ehrsam, J. B., & Sons Mfg. Co.
Miscampbell, H.
Williams Pat. Crusher & Pulverizer Co.

### PREPARED ROOFING—SHINGLES.
Carolina Portland Cement Co.
Reynolds Asphalt Shingle Co.

### PUMPS.
Allis-Chalmers Mfg. Co.
International Steam Pump Co.

### QUARRY CARS.
See Cars.

### ROAD MACHINERY.
Austin Mfg. Co.
Troy Wagon Works.

### ROOFING-METAL.
Sykes Metal Lath & Roofing Co.

### SAND.
Union Sand & Material Co.

### SAND AND GRAVEL WASHING PLANTS.
Dull & Co., Raymond W.
Link Belt Co.
Stephens-Adamson Mfg. Co.
Webster Mfg. Co.
Weller Mfg. Co.

### SAND LIME BRICK MACHINERY.
Amer. Clay Machy. Co.
Jackson & Church.

### SCREENS.
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Butterworth & Lowe.
Chain Belt Co.
Dull & Co., Raymond W.
Ehrsam, J. B., & Sons Mfg. Co.
Haiss Mfg. Co., Inc., Geo.
Hendricks Mfg. Co.
Johnston & Chapman Co.
Link Belt Co.
McLanahan Stone Machine Co.
Power & Mining Mach. Co.
Stephens-Adamson Mfg. Co.
Sturtevant Mill Co.
Toepfer, W., & Sons.
Webster Mfg. Company.
Weller Mfg. Co.

### SECOND-HAND MACHINERY.
Bourse.
Dolese & Shepard Co.
Grimshaw Co., Wm. B.
Shaw Mach. Co., Willis.

### SEWER PIPE.
Houston Bros. Co.
Plymouth Clay Products Co.

### SHEAVES, BLOCKS AND VALVES.
Haiss Mfg. Co., Inc., Geo.

### SINK AND FLOAT TESTERS.
Pennsylvania Crusher Co.

### SPREADERS, ROAD.
Troy Wagon Wks. Co., The.

### STEAM SHOVELS.
Marion-Osgood Co.
Thew Automatic Shovel Co.
Shaw Mchy. Co., Willis.

### STUCCO RETARDER.
National Retarder Co.

### TRAILERS, TRACTORS AND MOTOR TRUCKS.
Troy Wagon Wks. Co., The.

### TRAMWAYS.
Ambursen Company.
American Steel & Wire Co.
Link Belt Co.

### TRUCK AND WHEELBARROWS.
Kilbourne & Jacobs Mfg. Co.

### TUBE MILLS.
Allis-Chalmers Manufacturing Co.
Power & Mining Mach. Co.
Smidth & Co., F. L.

### WAGONS—DUMP AND REVERSIBLE.
Troy Wagon Wks. Co., The.

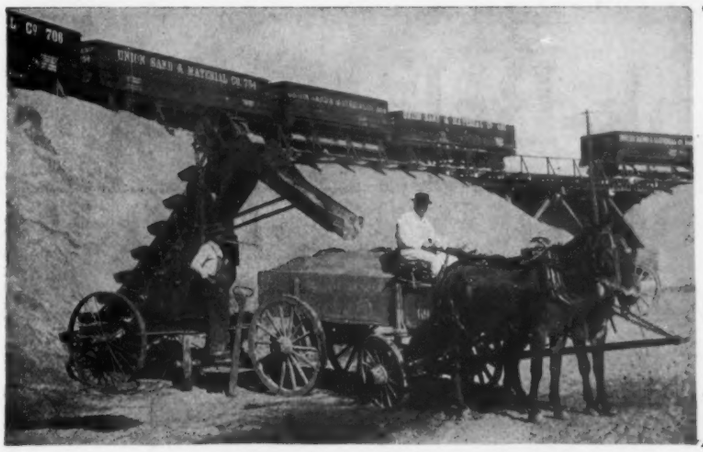
### WALL PLUGS AND TIES.
Bostwick Steel Lath Co.
Canton Metal Ceiling Co., The.
Sykes Metal Lath & Roofing Co.

### WATERPROOFING.
Cabot, Samuel, Inc.
Canfield Oil Co.
Carolina Portland Cement Co.
Ceresit Waterproofing Co.
Hercules Waterproofing Cement Co.
Maumee Chemical Co.
Sandusky Portland Cement Co.

### WEIGHING MACHINES.
Automatic Weighing Machine Co.
Schaffer Eng. & Equip. Co.
Sturtevant Mill Co.

### WIRE AND WIRE FENCING.
American Steel & Wire Co.

### WIRE ROPE.
American Steel & Wire Co.
Buckbee Co., J. C.
Leschen, A., & Sons Co.



If you don't believe money is made loading trucks by **Haiss Wagon Loaders,** just ask the man that has one.

## Haiss Wagon Loaders

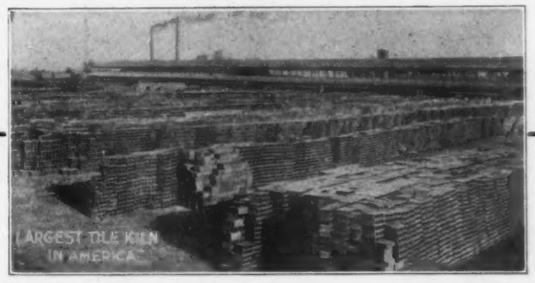
(Patented)

dig trap rock, sand, gravel, coal, coke, etc., from ground storage and load into trucks for less than 1 cent a cu. yd. for electric power, and at a speed of 1 cu. yd. per minute. This machine is different—**it digs.** Write for cost data and learn what contractors and material men have saved with a Haiss Wagon Loader.

**The George Haiss Mfg. Co.**

Incorporated

**146th St. & Rider Ave., - NEW YORK CITY**




**IT WILL PAY YOU TO HANDLE THE MODERN FIRE PROOF BUILDING MATERIAL**

We manufacture all sizes and shapes from the highest grade shale by the most modern process, including backing up, partition, floor arches and hollow brick; also DRAIN TILE.

**VIGO-AMERICAN CLAY CO.**

**25 So. Seventh St., TERRE HAUTE, IND.**

# BLAST HOLE DRILLS

The "Clipper" Steam Traction

The "Clipper" Gasoline Traction

**We make the "CLIPPER"—The drill that is USED!**

**LOOMIS MACHINE CO., TIFFIN, OHIO**

ROCK PRODUCTS AND BUILDING MATERIALS

# Index to Advertisements

MAY 7, 1915.

A. & C. Stone & Lime Co..... 31
Allis-Chalmers Mfg. Co.....
Ambursen Co. ..... 19
American Cement Plaster Co.. 22
American Clay Machine Co...
American Clay Co..... 37
American Process Co.....
American Pulverizer Co.....
American Steel & Wire Co....
Atlas Car & Mfg. Co.....
Atlas Portland Cement Co....
Austin Mfg. Co.....

Bacon, C. Earle.....
Bartlett, The C. O., & Snow Co.
Belden Brick Co..... 8
Best Bros. Keene's Cement Co. 5
Bonnot Co., The.....
Books for the Trade.....
Bostwick Steel Lath Co..... 9
Bourse, The ..... 25
Bradley Pulv. Co.....
Buckbee, J. C., Co.....
Butterworth & Lowe.....

Cabott, Samuel, Inc.....
Caldwell, H. W., & Son Co....
Canada Pebble Co., Ltd.....
Canfield Oil Co..... 35
Canton Metal Ceiling Co., The. 39
Cardiff Gypsum Plaster Co.... 3
Carolina Portland Cement Co.
Cement Tile Machinery Co....
Ceresit Waterproofing Co.... 20
Chain Belt Co.....
Chalmers & Williams..... 7
Chattanooga Paint Co.....
Chicago Portland Cement Co.. 5
Clayton Air Compressor Wks. 6
Classified Business Directory. 36
Cleveland Builders' Supply Co. 21
Clinchfield Portland Cement Corp. .....
Clinton Metallic Paint Co.... 21
Columbus Chain Co., The.....
Coplay Cement Mfg. Co.....
Crane, P. D., Co..... 9

Davenport Loco. Works.....
Duff Patents Co.....
Dull & Co., Raymond W..... 21
Dunning, W. D.....

Ehrsam, J. B., & Sons Mfg. Co.

Faeberhill Mfg. Co..... 2
Farrell Fdy. & Mchy. Co.....
Foster Co., L. B..... 25
Fuller Eng. Co.....

Goodrich, B. F., Co.....
Gordon-Hittl Co. .....
Grimshaw Co., Wm. B..... 25
Grimsley, G. P.....

Haiss, Geo., Mfg. Co..... 37
Hannibal Lime Co..... 2
Harris Brick Co..... 8
Hendricks Mfg. Co.....
Hercules Waterproof Cement Co. .....
Houston Bros. Co..... 39
Hunt, Robert W., & Co..... 8
Huron, Wyandotte Portland Cement Co. ..... 2

Imperial Belting Co.....
Improved Equipment Co..... 10
Indianapolis Cable Excavator Co. ..... 9
International Steam Pump Co. 6

Jaeger Machine Co.....
Jaite Co., The..... 25
Jeffrey Mfg. Co.....
Johnston & Chapman Co.....

K.-B. Pulverizer Co., Inc..... 6
Kansas City Pt. Ct. Works...
Kelley Island Lime & Trans. Co. ..... 10
Kent Mill Co.....
Kilbourne & Jacobs Mfg. Co... 39
Kissel Motor Car Co..... 21
Kritzer Company, The.....

Lehigh Portland Cement Co.. 10
Leschen, A., & Sons Rope Co.. 39
Lewistown Fdy. & Mch. Co....
Link Belt Co. ..... 38
Loomis Machine Co..... 37

McLanahan Stone Mch. Co....
McMyler Interstate Co..... 9
MacNeal, Jas. B., & Co.....
Manierre Engineering & Mchy. Co. ..... 7
Marion-Osgood Co., The.....
Marquette Cement Mfg. Co... 5
Maumee Chemical Co.....
Meade, Richard K.....
Metropolitan Paving Brick Co. 3-8
Miscampbell, H. .....
Mitchell Lime Co.....

National Lime & Stone Co.... 4
National Mortar & Sup. Co....
National Retarder Co.....
Northwestern Expanded Metal Co. ..... 22
North Western States Portland Cement Co. ..... 4

Ohio & Western Lime Co..... 4
Owen & Son, J. D..... 39

Pennsylvania Crusher Co.... 2
Phoenix Portland Cement Co..
Pierce Arrow Motor Car Co..
Plymouth Clay Products Co... 4
Plymouth Gypsum Co., The... 4
Power & Mining Mach. Co....

Raymond Bros. Impact. Pulv. Co., The.....
Revere Rubber Co.....
Reynolds Asphalt Shingle Co.. 2
Ricketson Mineral P. Wks....
Ruggles-Coles Eng. Co.....

Sandusky Portland Cem. Co...
Sauerman Bros. ..... 9
Schaffer Engineering & Equipment Co., The.....
Scioto Lime & Stone Co.....
Smidth, F. L., & Co.....
Shaw, Willis, Mchy. Co..... 25
Stephens-Adamson Mfg. Co... 19
St. Louis Port. Cement Co... 40
Sturtevant Mill Co.....
Sykes Metal Lath & Roofing Co. 5

Thew-Automatic Shovel Co., The .....
Thornton Fire Brick Co..... 8
Toepfer, W., & Sons.....
Traylor Eng. & Mfg. Co..... 7
Troy Wagon Works Co., The..
Trussed Concrete Steel Co.... 20

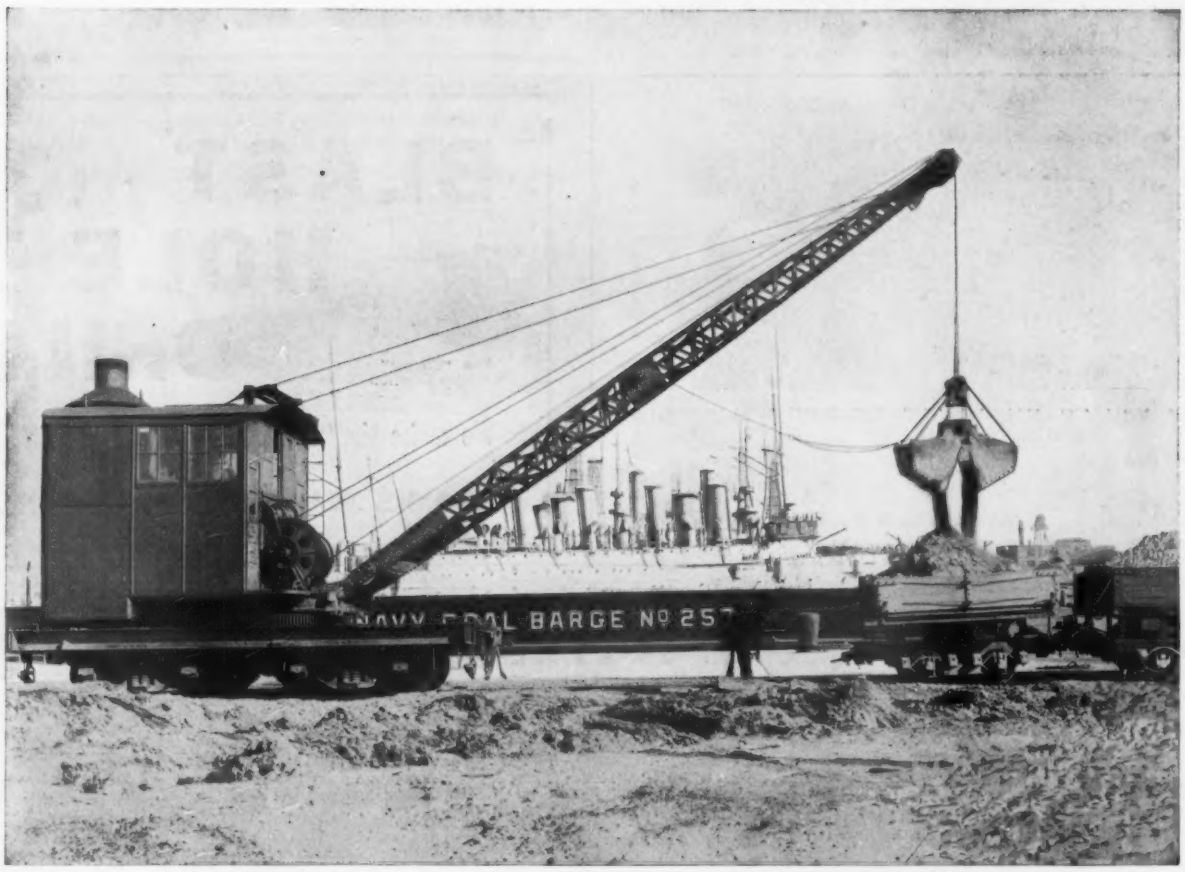
Union Mining Co.....
Union Sand & Material Co....
U. S. Gypsum Co..... 40
Urschel Bates Valve Bag Co.. 20

Vigo-American Clay Co..... 37
Vulcanite Portland Cement Co.

Webb City & Carterville Fdy. & Mch. Co..... 6,
Webster Mfg. Co.....
Weller Mfg. Co..... 21
Wheeling Wall Plaster Co.... 2
Whitehall Cement Mfg. Co....
Williams, C. K., Co.....
Williams Patent Crusher & Pulverizer Co. .....
Wolverine Portland Cement Co.
Woodville Lime & Cement Co.. 1

# The Link-Belt Revolving Locomotive Crane

## For Handling and Storing Coal, Stone, Gravel and all materials—loose or in bulk




Standard Link-Belt Locomotive Crane at the League Island Navy Yard, Philadelphia

**THE LINK-BELT CRANE** shown above is one of three cranes used at the United States Navy Yard, League Island, Philadelphia, by the Navy Department of the United States Government.

It is our standard locomotive crane equipped with 1½-yard grab bucket, and fitted with all modern attachments. It is built to the highest standards in design, material and workmanship.

If you are now paying $10 per day, or more, for manual labor which can be done by a locomotive crane, we have the facts to show you that our machine is a good 6% investment.

**LOCOMOTIVE CRANES** occupy today a highly important place in the art of handling materials. In the one machine are combined a portable hoisting engine, swinging derrick, grab bucket unloader and switching engine. Their adaptability to a wide range of service and conditions finds for them increasing applications. The Link-Belt standard Crane is a machine of all-round utility; it is driven by steam or electricity, and equipped to operate Grab Bucket, Hook Block, Electric Lifting Magnet, Drag Scraper Bucket, Steam Shovel Dipper and Pile Driver.

**WRITE FOR ILLUSTRATED CATALOG No. 158 WRITE FOR BOOK No. 189**

**We also design and build Coal and Ashes Handling Machinery, Elevator and Conveyors for all Materials, Belt Conveyors, Bucket Carriers, Screens, Crushers, Grab Buckets, Gravel Plants, Wagon Loaders, Car Unloaders, Etc.**

## LINK-BELT COMPANY

**PHILADELPHIA CHICAGO INDIANAPOLIS**

New York .....299 Broadway
Boston.....49 Federal St.
Pittsburgh .....1501 Park Bldg.
St. Louis.....Central National Bank Bldg.
Buffalo.....698 Ellicott Square

Detroit.....911 Dime Bank Bldg.
Cleveland.....1304 Rockfeller Bldg.
Seattle.....580 First Ave. South
Denver.....Lindrooth, Shubart & Co.
San Francisco.....N. D. Phelps, Sheldon Bldg.
Knoxville.....D. T. Blakey

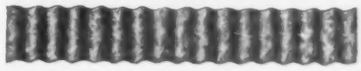
New Orleans.....Whitney Supply Co.
Birmingham.....General Machinery Co.
Los Angeles.....204 N. Los Angeles St.
Minneapolis.....Link-Belt Supply Co.
Toronto, Can.....Can. Link-Belt Co., Ltd.

## Warpless Corners!

You need them on every job of lap or drop siding. You know what a tedious and expensive job it is to mitre your siding.

Use "Art-Kraft" Metal Corners and secure a more attractive and durable corner—a corner that positively cannot warp or pull away—and save money. These corners when painted cannot be distinguished from the siding except that they present a neater job. Use them once and you will always do so. Made for both Inside and Outside Corners.

## "Anchor" Wall Ties



For Brick, Veneered and Concrete-Block walls these ties are indispensable. They insure a bond that is permanent and satisfactory. They are cheap and serviceable. Once you use the "Anchor" Ties, you will prefer them always.

*Write for samples and prices.*

**THE CANTON METAL CEILING CO.**
**1950 Harrison Ave.** **CANTON, OHIO**
*Makers of "ART-KRAFT" Ceilings and Shingles*

## QUARRY AND ROCK CARS

TRADE MARK

High grade cars of all standard types or special designs are manufactured by us. We can cite several installations of interest to any one handling rock.

**The Kilbourne & Jacobs Mfg. Co.**
**COLUMBUS, OHIO**

## THE BOURSE

**Will place your requirements before the CREAM of the industry.**
**WRITE US**

# SEWER PIPE

## ALSO

Hollow Building Blocks
Face Brick
Other Fire Clay Products
Roofing Slate
Pearl Hydrated Lime
Builders' Specialties

PRICES ATTRACTIVE

## HOUSTON BROTHERS COMPANY

PITTSBURGH, PA.

ESTABLISHED 1850

The Largest Lime Plant Individually Owned in The Central States

## Marion Lump Lime in Bulk
## Marion Lump Lime in Barrels

Mason's Hydrate Clover Leaf Brand
Finishing Hydrate Star Brand

Agricultural Lime All Kinds

WRITE TO-DAY
QUICK SERVICE

## John D. Owens & Son

Owens, Marion County, Ohio

## Wire Rope for Every Requirement

During our many years of rope making, we have specialized in producing high grade Wire Rope for all purposes.

For derricks, cranes, excavators, steam shovels, and for sand and gravel handling equipment, we highly recommend

Reg. U. S. Pat. Off.

**Hercules** Wire Rope is wear-resisting at every point. It combines strength, elasticity, toughness and flexibility in correct proportions for maximum service.

We would be glad to have you write for descriptive catalog, and for any desired information.

**Established 1857**

## A. Leschen & Sons Rope Co.

**St. Louis, Missouri**

New York Chicago Denver Salt Lake City San Francisco

# U. S. G. Goods Plus Service Power Equals Better Business and More Profits

AS a supply merchant, your selling efforts and expense in marketing U. S. G. Products are necessarily less—you are marketing goods of established superiority and acknowledged by Architects and Contractors as ***standard.***

U. S. G. Products dominate because the superior quality of U. S. G. Products is recognized and advertised.

## Are You Using This Advantage?

Many U. S. G. Dealers are forging ahead—cashing in on more sales and profits—through the live wire aid furnished exclusively to U. S. G. Dealers by our Advertising Department's "Dealers' Service Bureau." This service represents a high development of selling assistance not available elsewhere in the Gypsum industry.

So, in handling U. S. G. Plaster, SACKETT Plaster Board and other U. S. G. Products, you not only get the best goods but you also get ***steam behind them in promoting sales.***

Find out about this new and exclusive service for U. S. G. Dealers. Do it today—it's important to you.

# United States Gypsum Co.

*The World's Largest Producers of Gypsum Products*

NEW YORK CLEVELAND CHICAGO MINNEAPOLIS KANSAS CITY SAN FRANCISCO

# As the Trade Ordains

Red Ring Portland Cement

*Quantity*
*Service*
*Quality*

*Above Standard*
*Specification*
*Requirements*

Thru The Dealers

SALES OFFICE: **St. Louis Portland Cement Works** LIGGETT BUILDING St. Louis, Mo.